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ABSTRACT

Prepared under a contract between UNESCO and IFLA (the International Federation of Library Associations), this modular curriculum is intended as a resource from which curricula can be constructed by individual departments of information studies to meet local needs and circumstances. Following an introductory discussion and explanation of the modules, outlines of 12 core modules are presented: (1) information in its social and communications context; (2) information users; (3) quantitative methods; (4) research methods; (5) information sources; (6) information storage and retrieval systems; (7) information services; (8) electronic data processing; (9) application of information technology; (10) telecommunications and networking in information systems; (11) management of information systems and services; and (12) economics and marketing of information. Outlines are also provided for eight elective modules: (1) design of computer-assisted information systems; (2) sectoral/subject-oriented information sources and systems; (3) planning and design of buildings and facilities for information centers and libraries; (4) online searching; (5) health and welfare library and information services; (6) agricultural library and information services; (7) audiovisual studies; and (8) printing, bookbinding and conservation. Titles of other possible elective modules are also provided, as well as objectives, content, teaching methods, comments, and a brief bibliography for each module. An abbreviated curriculum, a specialized curriculum in information technology, and a selective list of journals are appended. (KM)

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# A Modular curriculum in information studies

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# A MODULAR CURRICULUM IN INFORMATION STUDIES

prepared by

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United Nations Educational,
Scientific and Cultural Organization



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# FOREWORD

For many years, the General Information Programme of Unesco has been issuing a large number of guidelines to facilitate the development of national information systems in Member States - including libraries, information services and archives.

It is generally acknowledged that the best long-term investment for the development of adequate information systems is the education and training of information specialists. Many developed and developing countries are making tremendous efforts to provide suitable facilities for this purpose. However, while the provision of training facilities and teaching staff is the responsibility of national authorities, international assistance is often called upon for the production of teaching materials. The need for teaching materials has been voiced repeatedly in many areas for some time now and many documents in the field of education and training are available in several languages from Unesco (see the list at the end of this document).

To start with, it was necessary to propose documents of a rather general nature, such as general introduction, curriculum development, policy formulation and manpower forecasting. The time has now come to propose more specific topics such as the present modular curriculum in information science. Other guidelines on even more specialized topics such as online retrieval or the marketing of information services are in preparation.

General remarks have to be made concerning such documents.

First of all, as anyone involved in the process of education knows, teaching is a very personal activity which is determined by the educational environment, the students and the personality of the professor. A curriculum or a course on a given topic is the outcome of many interactions and the search for agreement among various experts results almost inevitably in endless debates. It is very important to note that guidelines in this series, and especially in information science curriculum, are documents which propose recommendations or directions but do not intend to impose any ready-made solution. It is only on the basis of local material and administrative circumstances, staff available, and of course an assessment of educational needs that a specific curriculum can be designed. It is hoped that the reader will keep this approach in mind when using this document.

For the same reason, authors are given general indications concerning the orientation of their contributions, but they are not required to observe, on minor points, absolute consistency with other documents in the series. The reader will certainly understand that such consistency would be artificial and that an author needs the intellectual freedom which goes with intellectual responsibility.

It must be pointed out that this enterprise represents the outcome of a long involvement by the Unesco General Information Programme in

the design of information science programmes in all parts of the world. By sending individual consultants to advise Member States, in the management of field projects at the national and regional levels and in the organization of seminars, Unesco has tried to satisfy the needs encountered in many different situations. In preparing the working paper of the Regional seminar on curriculum development in information studies, which took place in Bangkok in 1985, Mr K.H. Roberts brought together the knowledge and wisdom acquired on these various occasions.

J.A. Large, worked on this basis in order to prepare the present modular curriculum "from which curricula can be constructed by individual departments of information studies to meet local needs and circumstances".

It is hoped that readers will find the result worth all the efforts put into it.

The designations employed and the presentation of the material throughout these Guidelines do not imply the expression of any opinion whatsoever on the part of Unesco.

Any comments or suggestions for improvement or any report on the experience gained by other countries in using these Guidelines are welcome. Correspondence should be sent to the Division of the General Information Programme, Unesco, 7 place de Fontenoy, 75007 PARIS, France.

# PREFACE

This Modular Curriculum for a higher degree programme in Information Studies has been prepared under a contract between Unesco and IFLA. It is intended as a resource from which curricula can be constructed by individual departments of information studies to meet local needs and circumstances. The Curriculum takes into account recent developments in information studies as well as relevant Unesco documents in this field, as indicated at the end of the Introduction.

The precise meaning of the term "information studies" and its relationship to "information science" and "librarianship" remains a contentious issue in many quarters. Rather than add to this debate on terminology, the author has tried to follow the guideline issued by Unesco for this project: "The emphasis of the curriculum will be information science and related matters; traditional areas of library science should be included only in so far as pertinent to the information science curriculum."

The author would like to express his thanks to colleagues who gave up time to guide him through the intricacies of their own specialist areas; never has he been so strikingly reminded of the diversity and breadth of coverage in information studies. In particular, Michael Dewe, Dick Hartley, Tony Hillier, Ray Lonsdale, David Matthews, Martin Rowat, Malcolm Tunley and John Turner all found time in their busy schedules to discuss individual points; although they may still disagree with the final draft their comments have greatly eased the difficult task

of curriculum development. Special thanks are due to Yves Courrier, Chief of Training Specialists and Users, General Information Programme, Unesco, whose encouragement and help at various stages has proved invaluable.

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February 1987

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## INTRODUCTION TO THE MODULAR CURRICULUM

### The curriculum and information studies

It is now recognised that information plays a very important role in national development and that an adequate library and information structure is therefore essential. Such a structure requires professional information personnel of sufficient quality and in sufficient numbers to plan, design, organise, manage and operate a wide range of information systems and services. Furthermore, information systems and services should be able to draw upon a theoretical foundation established by fundamental research in information science. For this purpose, skilled research workers are required. It is the objective of a higher degree programme in information studies to produce graduates who are capable of undertaking these various roles.

The field of information studies is a dynamic inter-disciplinary area of study, drawing as it does upon such disparate disciplines as management studies, computer science, communications studies and librarianship as well as more peripheral subjects such as psychology, linguistics and statistics. To be successful, any curriculum in information studies must nevertheless be conceived as a logical, integrated and coherent whole whilst retaining a flexibility and responsiveness to change. Furthermore, information studies includes a strong practical component which must be fully catered for within the curriculum. It therefore presents a complex area

to teach and study. The design of curricula for this increasingly important subject can prove difficult, posing awkward questions about the inclusion or exclusion of particular topics and the emphasis to be given to individual topics. This Modular Curriculum is offered as one means of simplifying the task of designing a postgraduate course in information studies.

At the outset it must be stressed that the curriculum outlined in the following pages is not intended to match in detail the specific requirements of any particular academic institution; each department inevitably works within the academic and organisational framework of its parent institution and will have at its disposal resources - human and otherwise - which are particular to itself. Furthermore, curricular requirements must be related to overall educational and cultural circumstances which vary from place to place. Rather than functioning as some kind of master plan for a curriculum, then, the modules should be seen as a basis from which an actual curriculum can be constructed in the light of local conditions and needs. From them can be selected just as much as is required, and particular emphases can be superimposed on the overall plan.

Although information studies is taught at an undergraduate (first degree) level in some countries, this Modular Curriculum is designed for the first professional qualification, postgraduate level (using British terminology; the graduate level, using American terminology). It is therefore intended that the programme will extend over a period of between nine and twenty-four months at full-time study (or the equivalent in part-time

study), depending upon local practice, although it is recommended that a programme of around sixty weeks be adopted wherever possible for a programme in information studies (see below).

## Objectives of a programme in information studies

Information plays an important role in society - in research and development, planning, decision-making, problem solving and in the learning process. Advances in computer and communications technology have increased our capacity for creating information systems and services to meet a wide range of user needs. This Curriculum is intended to serve as a starting point for institutions of higher learning wishing to introduce programmes in information studies which take account of the latest developments. The goal of such a programme should be to develop professionals who are qualified to establish, manage, operate and evaluate user-oriented information systems and services. It should also develop in students a capacity for experimentation and a receptivity to innovation which will advance professional practice.

A programme in information studies should have the following objectives:

1. To familiarise students with the role of information in society.
2. To make students fully aware of the sources of information available in society - documentary, audio-visual, machine-readable and in the form of human expertise - and to develop

skills for exploiting these resources.

3. To familiarise students with methodologies for the identification, analysis, organisation, evaluation, presentation and dissemination of information in the context of various types of information services and for different user groups.

4. To introduce students to modern management techniques which can be applied to the study of user needs, to policy analysis and to the economic and social planning, assessment and marketing of information.

5. To provide students with the basic methodology for planning, designing and developing local and regional information systems and services which are responsive to user needs.

6. To provide students with the practical skills necessary to collect, preserve, organise and disseminate information in whatever forms it may be recorded.

7. To provide students with an understanding of and capacity to use existing and emerging technologies applicable to information systems and services.

8. To introduce students to research methods so that they may use such methods to identify, analyse and solve specific problems, and also be capable of applying the results of research in order to improve professional practice.

Students completing such a programme should be able to enter professional, managerial and leadership posts in a wide range of institutions including: information centres in industry, commerce, government, international and regional organisations; libraries - academic, public and special; database production and

online information vendor services; organisations concerned with the development of information systems; software houses; information brokerage firms. From them will also be drawn future teachers of information studies.

**Criteria for student admission**

Students admitted to a postgraduate programme in information studies should ideally possess a good first degree (in British terminology, a good second-class honours degree). Every effort should be made to maintain high academic admission standards; no matter how sound is the curriculum and excellent are the teaching staff and other resources, intelligent and enquiring minds are needed to make a programme a success.

Traditionally, programmes in librarianship have mainly attracted applicants with first degrees in the humanities. A curriculum such as the one outlined below, with modules, for example, in quantitative methods, electronic data processing, and the management of information systems and services, would greatly benefit from students who are not only intelligent but who are also numerate, computer-literate and/or familiar with the behavioural sciences. There is a place for information professionals with a diversity of subject backgrounds, and the humanities student should not be discouraged from entering a programme in information studies. Nevertheless, the emerging markets for information workers in the areas of database design and construction, information systems design, information

analysis and information management are likely to prove particularly attractive to those students with a scientific background.

The subject background of the students will have some effect on course content. A student who has already completed a statistics course, for example, would not need to follow an entire module in quantitative methods primarily designed for those students with little or no background in this area. The modular structure of the programme should allow such a student either to concentrate on those aspects of statistics which are particularly relevant to information studies and which might not have been included in a general statistics course (for example bibliometrics) or else to omit this module altogether in favour of a different module. Likewise, the student with a computer science background would not be required to study introductory material on computer hardware and software or elementary programming. Instead, more time could be devoted to other modules or else the special applications of computers to information work could be examined in more detail, perhaps by using case studies or project assignments. A curriculum in information studies must remain flexible to the needs of a variety of students with diverse backgrounds who will and should be attracted to this multi-disciplinary area.

Important as are the academic qualities of applicants, personal characteristics should never be overlooked. Effective information professionals should be capable of communicating with a wide

range of people and able to present information concisely and clearly in oral or written form. They should also be capable of entering the highest management positions. Those students who are articulate, confident and personable will be well-placed to succeed in the information marketplace, and therefore should be encouraged to enter programmes in information studies.

## Programme length

Postgraduate programmes in information studies typically range from around nine months' to twenty-four months' full-time study, or the equivalent in part-time study. The growing complexity of the information environment, and in particular the increasing demands of information technology and information management, are strengthening the case for a programme extending over two academic years of full-time study. This Curriculum therefore assumes a teaching programme of sixty weeks. The modules discussed in the following section and presented in this Modular Curriculum require such a period of full-time study if all elements considered important in a first qualification programme in information studies are to be studied to a sufficient depth. The danger inherent in a shorter programme is that treatment will be superficial, reducing academic credibility, undermining student enthusiasm and commitment, and eroding professional acceptance of the programme and its graduates. If it proves impossible to establish a programme extending over sixty teaching weeks, then it is preferable to reduce the content of the programme rather than to dilute its presentation.

A programme which must be completed in, say, thirty teaching weeks (the approximate length of a typical academic year) can be constructed from this Curriculum in two ways without introducing unacceptable superficiality. The modular structure of the curriculum facilitates modifications, and parts of modules or even entire modules can be excluded from the programme. In the final analysis, such a modification of the curriculum must take account of local preferences, needs and resources, but some guidance is offered in this document. Firstly, advice is offered at the end of each module on any topics which could be left out or treated briefly if time is at a premium. Secondly, an Abbreviated Curriculum is set out in Appendix I which is intended to be taught in thirty weeks. The main criterion for inclusion is that the module or sub-module must be central to information studies: that is to say, any student completing a first qualification at the postgraduate level must have studied this topic. Other topics, which are undoubtedly important to an information professional but are not key information subjects, have been omitted from the shortened programme. Some of them, at least, could always be studied at a later date in specialist courses. It is for this reason that such an admittedly important module as Quantitative methods has been severely curtailed in the shortened programme.

An alternative way of coping with the limitations of a short programme is to offer a specialised programme in one aspect of information studies rather than a generalist approach. The increasing complexity of information studies is likely to

encourage the design of such programmes in, for example, information technology, the management of information or information for development. As an example, Appendix II lists the modules and sub-modules from the main curriculum which could be included in a specialised programme in Information Technology.

Some institutions may in fact choose to offer such specialised programmes instead of a more general programme not because they are a way of coping with a postgraduate programme which cannot exceed one academic year but because they answer a need for a particular, specialised kind of information professional. For most institutions, however, the somewhat broader programme will probably be favoured as a first qualification in information studies. More specialised programmes can then be subsequently taken at a second qualification level.

Full-time rather than part-time programmes offer many advantages to students. Firstly, the individual modules making up the programme can be studied in close proximity within a coherent and integrated structure. Secondly, the students become members of an academic community in which they can benefit from the close proximity of fellow students as well as staff. Thirdly, they are freed from the worries and concerns of a job and can concentrate all their energy and resources on the academic programme. Nevertheless, financial, career and personal factors can all make it impossible for a student, especially at the postgraduate level, to study full-time. Many students will have little choice but to study part-time. In an area like information studies, this

can in fact offer some compensating advantages. If the student is employed in an information-related job, practice can be blended with theory more easily than for the full-time student, especially if the latter has as yet no professional information experience.

The modular structure of this curriculum facilitates part-time study. Individual modules, or even sub-modules, could be studied separately, thus allowing the student to gain over a period of time the requisite number of credits to graduate.

**The modules**

This curriculum is divided into a number of discrete modules. Twelve of the modules (C-01 to C-12) are considered to be of particular importance to a first qualification postgraduate programme in information studies; the remaining modules (E-13 to E-20) comprise subjects which could be offered as electives. The elective modules chosen for inclusion are intended to be suggestive rather than prescriptive; in a broad area like information studies a wide range of subjects could be included, depending upon local needs and local expertise. Some additional elective titles are suggested at the end of this work, and even this list is by no means complete. Electives E-13 to E-20 are considered particularly relevant to information studies and in most cases they grow out of one or more of the core modules, enabling students to explore in greater depth selected areas of special interest or concern.

It is difficult to offer precise guidelines on the balance between core and elective courses in any actual curriculum implemented in a specific institution. The choice of elective courses for any institution is closely related both to its resources (and especially the availability of staff who have a knowledge of and special interest in the subject) and its local needs. It would be possible to devise a curriculum which consists of the twelve core modules only; alternatively students might be allowed to select a number of electives. The length of the postgraduate programme will also influence this decision - clearly a two year programme offers more scope for elective teaching than a course lasting only nine months. As a working rule, however, it might be considered that twelve core courses supplemented by between three and four elective courses would constitute a reasonably balanced programme for information studies. The amount of basic information and the the range of skills which must be passed on to all students will normally suggest that more time is devoted to core than elective courses. At the same time, elective courses enable students to pursue in greater depth those subjects which particularly interest them or seem to be especially relevant to their future professional career. They also can draw upon the individual enthusiasms and expertise of staff. If the programme does allow students to take several electives it is important that these electives should be chosen under staff guidance to ensure that a coherent package of elective and core courses results.

As discussed above under "Criteria for student admission" some

students may already be familiar with certain aspects of a module from previous academic courses (for example, programming) and not require their further study. The modules have been laid out to facilitate choice of topics or sub-topics to meet such circumstances.

In some instances, the module structure could quite properly be amended to suit local needs. In particular, the relationship between modules and sub-modules can be modified. One module could be divided into two (for example, online searching could be removed from Module C-05, Information sources, and created into a separate module) or two modules could be merged into one (for example, Module C-03, Quantitative methods and Module C-04, Research methods). It should be noted, however, that such changes may have significant implications for the curriculum. By dividing one module into two separate modules, more emphasis is given to the content; a separate module dealing with online searching, for example, would give that topic a greater weight in the programme. Alternatively, by merging two modules, for example, Quantitative methods and Research methods, less emphasis is suggested for the new combined module than was the case with the two separate modules. In this particular example, the merger might also suggest that quantitative methods is closely and only linked with Research methods rather than being a tool which can be applied to, say, management or systems design and evaluation. Module splitting and merging should therefore be applied with care.

Inevitably in a field such as information studies which is

concerned with knowledge, skills, techniques and methodologies which can be brought together to provide an effective and efficient information service, there will be some overlap in content between modules. In many respects information studies represents an integrated whole which is only divided into discrete modules to facilitate teaching. This point should always be made quite clear to students. Unnecessary overlap should be avoided by close collaboration between the teachers of the various modules. If this is done, overlap will seem more apparent in the module outlines than real in the actual modules as taught; in any case, it is often useful to deal with a topic from several points of view as provided for in different modules - this should not be considered as overlap.

The interdisciplinary nature of information studies raises the question of the extent to which other disciplines should be included as discrete modules within the curriculum. Elements of sociology, psychology, history, linguistics and so on are included in the core modules as set out in this Curriculum. In the case of statistics, indeed, an entire core module is devoted to this subject. Nevertheless, it is considered that this approach should be employed cautiously. Information studies ought to be more than a collection of other disciplines welded together into some ungainly structure. When other disciplines do impinge upon information studies they should be taught from the point of view of information studies, ideally integrated into the relevant information studies' module. The brevity of time available at the postgraduate level and the breadth of subject coverage in

information studies also suggest that marginal material from other disciplines will have to be excluded in many instances.

**Module weighting**

Each of the modules has been given a weighting expressed in credits. It must be emphasised, however, that the term "credit" has been used simply as a measurement of module weighting to provide an indication of the relative time which it is recommended should be devoted to the content of each module within the overall programme. In other words, it is recommended that the module dealing with Management of Information Systems and Services (4 credits) should be allocated twice as much class contact time in the timetable as the module on Electronic Data Processing (2 credits). It is not intended to suggest any particular method of evaluating courses or to imply that any institution adopting the curriculum must or should use a particular credit rating structure for its own programme.

Absolute indications of module lengths measured in class contact hours are difficult to provide as individual institutions will have different lengths of programme, will choose to include more or fewer electives and so on. Nevertheless, an indication of module lengths in absolute terms is offered in this Curriculum, based upon a programme extending over sixty teaching weeks. Appendix I lists a shortened programme of thirty weeks, again with recommended credit weightings. A detailed timetable has not been provided, however, as the modular structure of this Curriculum offers a wide measure of flexibility which can be

exploited by any institution to match local needs and resource availability. Only in the case of a module needing to be completed before another one can be attempted has guidance been offered.

For the purposes of the credit weightings assigned, it is assumed that in each of the sixty teaching weeks the student spends twelve hours in class or formal laboratory/demonstration sessions. Total class contact for the programme will therefore be 720 hours.

The twelve core modules have been allocated a total of twenty-eight credits. In this particular timetable it has also been assumed that four electives are included in the programme, each accounting for two credits. A total of thirty-six credits therefore comprises the entire programe. A one credit module receives one thirty-sixth of the entire programme time (720 hours), that is twenty hours. It could be taught for one hour per week over twenty weeks, two hours per week over ten weeks, or whatever; the precise pattern must be decided by any institution adopting this curriculum. Similarly a four credit module could be taught for four hours per week over twenty weeks or two hours per week over forty weeks, giving it 80 hours.

**Module order**

The concept of a modular curriculum suggests that a considerable flexibility exists in the way in which the various modules can be fitted together into a complete programme. In any case, it is not

the purpose of this Modular Curriculum to establish a definitive timetable indicating which courses must be studied together in a particular term (semester) or which courses must be completed before others are started. In some instances, however, a natural sequence of modules does strongly suggest itself, and in such cases this has been indicated in the "Comments" included towards the end of each module. For example, Module C-01, Information in its Social and Communications Context, is intended to provide an overview of and introduction to the entire programme, and therefore must be studied at the outset. Module C-02, Information Users, also would seem to be a pre-requisite for other modules as a programme in information studies should be directed towards identifying and satisfying specific user needs. Module C-11 (Management of Information Systems and Services), on the other hand, might best be taught later in the programme when systems and services have already been considered from a design and operational point of view. In general, however, the sequence of modules is reasonably flexible and might be determined by non-curricular factors such as availability of staff or other resources at some stages in the programme rather than others.

The recommended class contact hours for each module represent formal sessions in class, seminar, lecture, laboratory or whatever. In an essentially practical subject such as information studies students should be encouraged to spend time outside of the formal timetabled sessions in laboratory work as well as in the library. It is for this reason that timetabled sessions in any given week ideally should not be too extensive (twelve

hours per week has been recommended here, though obviously some local readjustments would be possible). Students can gain much from independent work with hardware and software, preparing projects, developing case study exercises, following up points in their own reading, etc., and the programme should allow for this.

**Dissertation**

In some educational systems it is common practice on programmes leading to the award of a postgraduate diploma or degree to require that in addition to the completion of the taught courses a dissertation (using British terminology; in the United States the term 'thesis' would be preferred) must be submitted for assessment. Such a dissertation provides an opportunity for each student to undertake an in-depth study of one particular topic within information studies and in particular to apply the knowledge and techniques gained from the module on Research methods. Such a study would be directed at a specific research problem and conducted under the guidance of a faculty member who would act as supervisor. The results of the investigation are formally presented in the dissertation whose precise length (and other conditions) would normally be prescribed by the ordinances of the parent institution.

Any institution basing its programme in information studies on this Modular Curriculum could choose whether or not to require its students to complete a dissertation following their successful completion of the taught courses. If a dissertation

were to be included it should normally emerge from a part of one or more of the modules. The inclusion or exclusion of a dissertation should not have any implications for the content of the modules except that it may reduce the time available for the taught modules if a dissertation has also to be completed. One advantage of the dissertation in the case of such a broad subject as information studies is that it does enable a considerable element of specialisation (additional to any elective courses) within the overall programme. Whenever possible it is recommended that students should be given the opportunity to produce such a dissertation as an integral part of the programme in information studies.

## Resources

The provision of adequate resources is crucial for any postgraduate programme in information studies. Firstly, teaching staff of a high quality are required to cope with this complex and wide-ranging discipline. Staff should ideally possess a first degree of a high standing as well as a postgraduate qualification in information studies, computer science, librarianship or other related area, together with relevant operational experience. Proven research abilities and a publications record would be advantageous. The rapid rate of technological development in information storage, retrieval and transmission necessitates that staff have periodical opportunities to return either to full-time study/research or else to take up temporarily a suitable post in information work or an information technology industry in order

to maintain a "state of the art" knowledge of their subject. Information studies is an applied discipline and staff cannot necessarily ensure up-to-dateness from published literature alone, despite the importance of the latter. A commitment to research and the opportunity to take part in consultancy can also prove extremely important for staff development.

The range of subject areas within information studies suggests that a minimum of five and preferably seven full-time staff would be required to cover the broad fields of management and marketing, information technology, information sources, information systems and services, and information considered in its social, political and cultural context. If a programme in information studies has to be initiated with fewer staff, then every endeavour should be made to increase the staff complement to at least this minimum figure. Departments with more than seven staff will be able to reap the considerable benefits of greater specialisation in both teaching and research.

Faculty size clearly has a direct impact upon the number of students who can be enrolled on the programme at any one time. The IFLA standard for information schools is a ratio of one staff member for every twelve students, and this should not be exceeded if at all possible. Indeed, the increasing technological component within programmes of information studies, and the demands this makes upon staff to provide supervised laboratory sessions, suggests that a ratio of 1:10 would not be unreasonable. A faculty of just five could therefore only cope

with between twenty-five and thirty students on each year of a two-year programme.

Information professionals from a variety of information-related occupations can be employed as part-time lecturers; they have the advantage of bringing current practical experience into the classroom, thereby ensuring a firm link between the academic and the practitioner, between theory and practice. It is not to be recommended, however, that a high proportion of the faculty should be part-time; with all their undoubted virtues, part-time teachers cannot devote as much time and energy to educational or research interests as can their full-time equivalents.

A multi-disciplinary area like information studies could often benefit from inter-departmental cooperation with, say, the computer science or statistics departments. Such an approach must be treated with some caution, however; outside staff teaching in a department of information studies may have a tendency to present their lectures from the point of view of their parent department rather than the specific needs of information studies. Guidance should be given by faculty in the department of information studies to such staff as to exactly what is required for their students.

The staff resources of the department, no matter how good, must be supplemented both by student visits to various sectors of the information industry and also by inviting outside speakers from the information profession to address students. Such contacts with the profession offer an important supplement to faculty

teaching and again help to ensure that students are aware of the latest developments/concerns in the field. They may also help students to obtain suitable professional posts at the end of the programme.

A strong library with a wide range of periodical and monograph literature is of the utmost value and importance. Additionally, however, the strong technological emphasis of information studies requires laboratory sessions, workshops, etc., in which students can gain practical hands-on experience. In particular, several of the modules in this curriculum require students to use computers and relevant software (and this includes modules such as E-15, Planning and design of buildings and facilities for information centres and libraries, as well as the more obvious information technology modules). Access to mainframe computers, minicomputers or microcomputers (ideally to a variety of machines), together with associated peripherals (now including interactive video and CD-ROM players) is very important, together with examples of software used in information retrieval, expert systems, information housekeeping routines, and office automation. In certain instances (for example online searching of remote host computers) good telecommunications links, probably on an international scale, are highly desirable. In some cases training packages which will run on in-house computers can be used to provide hands-on experience, but such packages are only intended to supplement, not replace, use of real commercial systems. It might be added that the exposure of students to hardware is often staff-intensive and this should be borne in mind when considering

ideal staff-student ratios.

## Module bibliographies

The bibliographies appended to the modules are merely indicative; a small number of references central to the module have been included and in all cases monographs suitable for use as textbooks have been preferred to periodical articles. These readings are almost all in English, and local linguistic expectations of students (and staff) will to some extent determine their value as examples of the wide literature on information studies. In any case, these few readings must be supplemented by a much more extensive collection which should be available in the library. Attention can be drawn to the following Unesco publication which should prove valuable in the selection of library materials:

J. Stephen Parker. Library and information science and archive administration: a guide to building up a basic collection for library schools. Paris: Unesco, 1984 (PGI-84/ws/11)

Journals are especially important sources for information studies, and many of the most crucial titles will be published in the United States or Britain. A list of the most useful journal titles to support a programme in information studies is included in Appendix III. Audio-visual sources should not be overlooked, and in modules like "Planning and design of buildings and facilities for information centres and libraries" as well as the elective module dealing specifically with audio-visual sources, such materials will prove especially useful. Increasingly, the

library will also be required to collect software packages of relevance to information studies.

## Unesco and curriculum development in information studies

This Modular Curriculum draws heavily upon previous work undertaken on behalf of Unesco in the sphere of curriculum development in information studies. In particular, the following reports were of great value:


Report of the Curriculum Design Experts Group Meeting on the Establishment of the Africa Regional Centre for Information Science, University of Ibadan, 1984.

W.L. Saunders. Post-graduate training for information specialists: report prepared for the Government of the Republic of Venezuela by the United Nations Educational, Scientific and Cultural Organisation, 1984. (FMR/PGI/84/164E).

W.L.Saunders. Report on a visit to ISTIC, Beijing, China, 10 April - 4 May, 1985.

Kenneth H. Roberts. Curriculum development for graduate education in information studies. [Working Paper] Regional Seminar on Curriculum Development in Information Studies, Bangkok, 17-21 September 1985.

Regional Seminar on Curriculum Development in Information Studies, Bangkok, 17-21 September, 1985: Final report. (PGI-85/WS/33).

W.L. Saunders. Guidelines for curriculum development in information studies. Paris: Unesco, 1978. (PGI-78/WS/27).

Michael Cook. Guidelines on curriculum development in information technology for libraries, documentalists and archivists. Paris: Unesco, 1986. (PGI-86/WS/26).

## MODULAR CURRICULUM IN INFORMATION STUDIES

### Module outlines (with credit weightings)

| Core Modules | | Credits |
|---|---|---|
| C-01 | Information in its social and communications context | (2) |
| C-02 | Information users | (1) |
| C-03 | Quantitative methods | (2) |
| C-04 | Research methods | (1) |
| C-05 | Information sources | (3) |
| C-06 | Information storage and retrieval systems | (3) |
| C-07 | Information services | (3) |
| C-08 | Electronic data processing | (2) |
| C-09 | Application of information technology | (4) |
| C-10 | Telecommunications and networking in information systems | (1) |
| C-11 | Management of information systems and services | (4) |
| C-12 | Economics and marketing of information | (2) |
| | Total core module weighting | 28 |

**Elective modules ***

(4 modules of 2 credits each)

E-13 Design of computer-assisted information systems

E-14 Sectoral/subject oriented information sources and systems

E-15 Planning and design of buildings and facilities for information centres and libraries

E-16 Online searching

E-17 Health and welfare library and information services

E-18 Agricultural library and information services

E-19 Audio-visual studies

E-20 Printing, bookbinding and conservation

* Titles of some other possible elective modules are suggested below on page 74 but their content has not been detailed in this Curriculum.

## C-01 INFORMATION IN ITS SOCIAL AND COMMUNICATIONS CONTEXT
(2 credits)

### General objectives

To provide an overview of and context for the entire Programme.

To introduce students to the field of information studies.

### Module content

The nature of information. Definitions of information, data, knowledge, communication; the representation of information; information and social change; the role of information in development; information as a political and policy instrument.

The information cycle. The generation, collection, storage, transmission and dissemination of information; role of scientific communication; formal and informal communication - invisible colleges, informal exchange groups, social networks; information flow within and between socio-cultural groups; international information flow patterns - transborder data flows; information and the new technologies; the information explosion; barriers to information transfer; confidentiality and privacy of information.

The agencies of information transfer. The historical development of the information infrastructure; printing, publishing and the book trade; specialist media of information transfer - journals (history, characteristics, refereeing, proliferation, delays, new forms including electronic journals), patents, research reports, conference proceedings, trade literature, etc.; the mass media; audio-visual media; electronic publishing and electronic data; libraries - public, academic, special - documentation centres, information centres, secondary services (including database producers and hosts); information brokers; the information professions - professional associations, professional ethics.

National and international information policies. The planning and development of national and international information systems; the role of international agencies - United Nations, Unesco, IFLA, FID, etc.; factors affecting development of information infrastructures; difficulties in developing and using local information resources; gaining access to external information resources; preservation and transmission of the cultural heritage; manpower planning; manpower forecasting; education and training; continuing education.

The field of information studies. Information studies, information science and librarianship; Information science as a discipline; literature of information studies; relationships with other disciplines; research in information studies.

### Teaching methods

Seminars, lectures and assignments; importance should be attached to an exchange and sharing of experience.

### Comments

The nature of information, its collection, storage, retrieval and dissemination, is introduced as a foundation for the other modules. This module should therefore be dealt with at the outset of the Programme. In some cases it will introduce topics which will then be treated in more detail in subsequent modules. It is important that students should get an overview of information studies and appreciate the ways in which the various parts of the entire field interlock. Emphasis should therefore be given to the ways in which information is produced, disseminated and used, and the media, agencies and individuals involved in assisting these activities rather than dwelling in detail on any single aspect of the information process. The role of information studies as a discipline should be examined and students introduced to the major kinds of print and non-print sources relevant to this discipline.

If necessary, the sub-module, 'The field of information studies', could be excluded.

### Bibliography

Pauline Atherton. Handbook for information systems and services. Paris: Unesco, 1977

Ronald Charles Benge. Cultural crisis and libraries in the third world. London: Bingley, 1979

A. Dulong et al. Manuel du bibliothécaire documentaliste dans les pays en développement. 2me. ed. Paris: Presses Universitaires de France, 1981

Robert Escarpit. Théorie générale de l'information et de la communication. Paris: Hachette, 1976

William D. Garvey. Communication: the essence of science - facilitating information exchange among libraries, scientists, engineers and students. Oxford: Pergamon Press, 1979

Belver C. Griffith, ed. Key papers in information science. White Plains: Knowledge Industry, 1980

C. Guinchat & Michel Menou. General introduction to the technique of information and documentation work. Paris: Unesco, 1983 (also available in French and Spanish)

Colin Harrison & Rosemary Beenham. The basics of librarianship. 2nd. ed. London: Bingley, 1985

K.J. McGarry. The changing context of information: an introductory analysis. London: Bingley, 1981

Fritz Machlup & Una Mansfield, eds. The study of information: interdisciplinary messages. New York: Wiley, 1983

A.J. Meadows. Communication in science. London: Butterworths, 1974

Jesse H. Shera. The foundation of education for librarianship. New York: Wiley, 1972

## C-02 INFORMATION USERS (1 credit)

### General objectives

To familiarise students with different uses and users of information.

To introduce students to methods of studying and assessing needs.

To introduce students to the concepts and techniques of user education.

### Specific objectives

Students should be capable of designing and implementing user studies programmes to meet the needs of specific user groups.

### Module content

Categories of information users. Identifying users and potential users; definitions of need, want, demand, user requirement; users by professional groups - industrial, commercial, educational, etc; ethnic groups; users by age; users by subject groups; users by geographical area - urban, rural, by region, by country; information-seeking behaviour of different user groups.

The social organisation of information. Subjects and disciplines - characteristics, growth - fission, fussion; communication patterns in disciplines.

Use of information. Use of information for business - industrial, commercial educational, government, research and development; for pleasure; information for management.

User studies. User survey methods - questionnaire, interview, observation, case study; evaluation of user surveys (see also Module C04, Research Methods); library and literature use studies - use by different groups, non-users, use of literature by form, age, language, country of publication; application of user studies - interpretation of needs, new product/service development.

User education. Goals and objectives; methodologies and media; techniques; staff; content; evaluation; management; user education in schools; case studies drawn from various countries.

### Teaching methods

Lectures, seminars, case studies.

## Comments

Information systems and services are intended to answer the information needs of users and therefore it is important that students possess a grasp of the variety of user groups and the different kinds of uses for which information might be required. This module should consider users and use in the context of the local domestic society. It is best taught at an early stage in the programme as it should set the user context for such topics as information systems and information services.

"User studies" and "User education" could be treated relatively briefly if insufficient time is available.

## Bibliography


Ching-chih Chen & Peter Hernon. Information seeking: assessing and anticipating user needs. New York: Neal-Schuman, 1982

A.J. Evans & R.G. Rhodes. Education and training of users of scientific and technical information: UNISIST guide for teachers. Paris: Unesco, 1977 (also available in French, Spanish and Russian)

Nancy Fjallbrant & Ian Malley. User education in libraries. 2nd. ed. London: Bingley, 1984

Maurice B. Line. Library surveys: an introduction to the use, planning procedure and presentation of surveys. 2nd. ed. London: Bingley, 1982

J.R. de Loof et al. Les attentes des utilisateurs en information scientifique et technique. Paris: La Documentation française, 1977

K.J. McGarry. The changing context of information: an introductory analysis. London: Bingley, 1981

A.J. Meadows. Communication in science. London: Butterworths, 1974

## C-03 QUANTITATIVE METHODS (2 credits)

### General Objectives

To familiarise students with a series of quantitative methods and operations research techniques, and to consider their applications in library and information environments.

To introduce students in particular to bibliometrical methods and techniques used in information work.

### Specific Objectives

Students should be able to use with confidence relevant statistical methods both in a management environment to facilitate decision-making and to aid research in the library and information fields.

### Module content

Statistical methods. Data collection and presentation; measures of central tendency and dispersion; graphical representation of data - frequency distributions, graphs, smoothing, cumulative frequency distributions; central tendency and variability - mean, median, mode; normal distribution; correlation and regression analysis; sampling methods; probability definitions; hypothesis testing - non-parametric tests (chi-square test, sign test), parametric tests; variance analysis.

Operations research. Allocation problems, linear programming, assignment, transportation, queueing theory; simulation; Monte Carlo technique; sequencing; replacement; searching and inventory problems.

Bibliometrics. Origins and definitions; bibliometric distributions - Zipf's Law, Lotka's Inverse Square Law, Bradford's Law of Scatter; characteristics of bibliometric distributions - generalisation of the distributions, success-breeds-success phenomenon; aging, obsolescence, half-life; bibliometric coupling; co-citation; Vickery's interpretation of law of scattering, Brooke's work; rank and size frequency distribution; citation analysis - Garfield's work; validity of bibliometric measurements; bibliometric applications in libraries and information centres.

Computer analysis. Software for statistical calculations and correlations (eg. SPSS).

### Teaching methods

Lectures, seminars, case studies, assignments.

## Comments

Quantitative techniques may prove useful in other modules (for example, Module C-11, Management of information systems and services) and should therefore be offered early in the programme if possible. It should be stressed to students that quantitative techniques can play a vital role in managerial decision-making as well as in various kinds of research work. This module is also closely related to Module C-04, Research methods, with which it could be combined if prefered (see above, p.14).

## Bibliography


Charles H. Busha & Stephen P. Harter. Research methods in librarianship: techniques and interpretation. New York: Academic Press, 1980

Ray L. Carpenter & Ellen Storey Vasu. Statistical methods for librarians. Chicago: American Library Association, 1978

Roger R. Flynn. An introduction to information science. New York: Dekker, 1987

Francis Narin & Joy K. Moll. Bibliometrics. In Annual review of information science and technology, vol. 12. White Plains: Knowledge Industry, 1977, pp. 35-58

Marty J. Schmidt. Understanding and using statistics: basic concepts. 2nd. ed. Lexington: Heath, 1979

I.S. Simpson. Basic statistics for librarians. 2nd. ed. London: Bingley, 1983

## C-04 RESEARCH METHODS (1 credit)

### General objectives

To teach students how to design, carry out, interpret and present a research study.

### Specific objective

To enable students to undertake research projects included as course work in other modules, to prepare them for the presentation of a dissertation, either as a part of the programme or in subsequent pursuance of a higher degree, and to demonstrate the importance of research in the library and information sector.

### Module content

Definition of research. Basic concepts of research; types of research; components of scientific method; relevance of research methods to information studies; evaluation of completed research; ethical considerations.

Survey research methods. Purpose and uses of surveys in information studies; principles of survey research - problem of measurement, descriptive and analytical surveys; planning the survey - sampling, randomness, survey guidelines; selection of samples - size, reliability and validity; collecting the information - documentary sources, questionnaires (question construction, length, layout, pilot surveys, distribution and retrieval schedules), interviews (structured and unstructured, interviewers, timing, planning), direct observation, self-investigation; processing and analysis of data - coding, manual and computerised processing, software packages (eg. SPSS), percentages, variables, averages, measures of distribution (frequency, quantile), correlation, weighting, sampling error; interpretation and presentation of results - bias, non-response, interpretation of relationships, tabular and graph presentation, column, bar and pie charts.

Other research methods. Documentary research; bibliographical research; historical research - obtaining historical evidence, evaluation of sources; experimental research; evaluation research; case studies; comparative studies; content analysis; Delphi method.

The research proposal. Finding a research topic; writing the proposal - cost and budgetary considerations, time-span; report writing - style, presentation of statistical data; citation practice.

## Teaching methods

Lectures, seminars, case studies

## Comments

The module on Research Methods will be relevant to other modules and especially to the module on Information Users. It will also provide a foundation for any dissertation which might be included after the completion of all the taught modules. It presents a variety of research methodologies as well as dealing with the design, formulation and presentation of a research project. It is important that the content of this module, and especially the statistical elements, should be related to the needs of information studies. This module is closely related to Module C03, Quantitative Methods, with which it could be combined if prefered (see above, p.14).

The sub-module "Survey research methods" could be dealt with more briefly if insufficient time is available to examine in detail the various survey methods.

## Bibliography

Charles H. Busha & Stephen P. Harter. Research methods in librarianship: techniques and interpretation. New York: Academic Press, 1980

Maurice B. Line. Library surveys: an introduction to the use, planning procedure and presentation of surveys. 2nd. ed. London: Bingley, 1982

Nick Moore & Martin Hesp. The basics of writing reports etcetera. London: Bingley, 1985

C-05 INFORMATION SOURCES (3 credits)

General objectives

To familiarise students with a broad range of information sources, oral, printed, audio-visual and electronic.

To develop evaluative and practical skills in dealing with information sources.

Specific objectives

To enable students to use printed and audio-visual bibliographic and reference sources.

To enable students to carry out online searches on at least one commercial host using a variety of bibliographic and non-bibliographic databases.

To provide a practical introduction to examples of the various kinds of bibliographical and reference tools employed in libraries and information work.

Module content

Introduction to information sources. The literature of science and technology, the social sciences and the humanities; information sources (primary, secondary, tertiary); range of information sources - archives, print, non-print media, data sources; use of scientific literature.

Bibliographical control. The concept of bibliographical control; historical development; retrospective and current bibliographies - monographs and serials; the bibliographical control of non-book material; the national bibliographical apparatus; international bibliographical control - universal bibliographical control, universal availability of publications, role of international organisations, standards and cooperation.

Basic reference sources. Evaluation of reference sources; encyclopedias (general and specialist); biographical sources; dictionaries (general language dictionaries and specialist dictionaries); maps, atlases and gazetteers; directories; government publications; publications of international organisations; annuals and yearbooks; statistical sources.

Information sources. Oral sources; journals - problems, current trends, alternatives to the traditional journal; abstracting and indexing publications; technical and research reports (including in-house reports); monographs; patents; standards and specifications; trade literature; conference proceedings; dissertations and theses; guides to research in progress; problems of acquiring, organising and exploiting these

information sources in an information centre or library; problems of foreign-language documents - translations journals, ad-hoc translations, translations centres.

Online information. Online systems; bibliographic and non-bibliographic databases; hosts; equipment; telecommunications; command languages; the search process - interview, search strategy; practical online searching on a large commercial vendor; costs; management; training; evaluation; manual versus online information sources.

Audio-visual sources of information. User needs; materials - microfilm, microfiche, slides, sound tape, sound cassette, audio record, compact disk, tape-slide programmes, film, filmstrip, video tape, CD-ROM, optical disk; bibliographical control of audio-visual materials.

## Teaching methods

Lectures, seminars, practical exercises in using bibliographical and reference sources; hands-on experience of online searching.

## Comments

This module provides an opportunity for students to examine critically bibliographical and reference sources. It should be as practical as possible, involving students in using sources to answer reference questions, thereby gaining a working knowledge of these sources. Students should be introduced to a wide range of sources representing the main categories of bibliographies and reference materials. If possible students should compile a short bibliography for which they can utilise their bibliographical skills. The module also looks at the problems of acquiring, organising and exploiting the information content of different types of documents. Students should understand the roles of various types of publication in transmitting information and the advantages and disadvantages they present for users. They should also understand the problems for libraries and information centres in identifying, acquiring, organising and disseminating these different kinds of publications.

Retrieval of bibliographic and non-bibliographic information from online sources is an important component of this module, and practical hands-on searching on at least one commercial host should be included if possible. Various software training packages are available for online searching but these should be used to supplement rather than replace actual searching on a host system. This module also offers an opportunity to introduce students to the wide range of non-print information sources, to consider their strengths and weaknesses as information carriers and to examine any problems - acquisition, storage, preservation and use - which they present for information centres and libraries.

It would be possible to reduce the coverage of "Basic reference sources" and "Information sources" to just one of the following - Pure and applied sciences, Social sciences, or Humanities - as brief coverage of all three is provided in the sub-module "Introduction to information sources". Coverage of "Audio-visual sources of information" could also be in greater or lesser depth depending upon availability of time, and especially the extent of practical exposure which can be offered to the various kinds of media.

Bibliography


D. Davinson. Bibliographical control. 2nd. ed. London: Bingley, 1981

Carol H. Fenichel & Thomas H. Hogan. Online searching: a primer. 2nd. ed. Medford: Learned Information, 1984

Richard Fothergill & Ian Butchart. Non-book materials in libraries: a practical guide. 2nd. ed. London: Bingley, 1984

D.J. Grogan. Science and technology: an introduction to the literature. 4th. ed. London: Bingley, 1982

G. Higgens, ed. Printed reference material. 2nd. ed. London: Library Association, 1984

Bernard Houghton. Scientific periodicals: their historical development, characteristics and control. London: Bingley, 1975

W.A. Katz. Introduction to reference work. 2 vols. 4th. ed. New York: McGraw-Hill, 1982

L.N. Malcles. Manuel de bibliographie. 4th. ed. Paris: Presses Universitaires de France, 1985

A.J. Meadows, ed. The scientific journal. London: Aslib, 1979

Krishna Subramanyam. Scientific and technical information resources. New York: Dekker, 1981

A.J. Walford, ed. Walford's guide to reference material. 4th. ed. 2 vols. London: Library Association, 1980-82

## C-06 INFORMATION STORAGE AND RETRIEVAL SYSTEMS

(3 credits)

### General objectives

To equip students to respond intelligently to problems of information storage and retrieval.

To acquaint students with the principles of subject analysis and indexing, and to familiarise them with vocabulary control methods and record structures.

### Specific objectives

To provide students with an appreciation of cataloguing procedures using AACR2 as an example.

To introduce students to the principles of classification and to provide practical experience of using several examples of classification systems, including at least one enumerative and one faceted scheme

To provide experience of using post-coordinate indexing systems and to familiarise students with thesauri.

To introduce students to examples of real information systems - manual and computerised - and to ways of evaluating their retrieval performance.

(N.B. In each case the specific objective is to provide students with a theoretical framework based upon practical exercises so that they understand the principles behind these various ways of organising information, knowledge which can then be applied to any actual system encountered in their professional work. It is not intended that students should be rigorously trained in the detailed workings of, for example, a particular cataloguing or classification scheme).

### Module content

Bibliographic description of print and non-print materials. Records and record formats - fixed and variable fields, sub-fields, searchable and non-searchable fields; standard bibliographic descriptions - ISBD, MARC, UNIMARC formats; unit entries; cataloguing codes - headings, entries, references (eg. AACR2); filing systems - manual and computerised; catalogue use studies; ways in which record formats may vary according to user needs; CCF (Common Communication Format).

Content analysis. Principles and methods of content analysis; subject indexing - natural and controlled language, objectives of

index languages (to indicate subjects by words or codes, consistency, specificity, to indicate related subjects); indexing languages - vocabulary, syntax; types of index languages - pre-coordinate, post-coordinate; subject headings and dictionary catalogues - eg LCSH, Sears; classified systems and catalogues - enumerative and faceted (fundamental categories, facets, citation order, shelving order, schedule order), examples such as DC, UDC, LC, CC; conceptual analysis, division of knowledge into classes, notation, indexing (including chain indexing), means of updating, cultural bias; examples of classification schemes - eg. UDC, DC, LC, CC; thesaurus - structure, printed thesauri; post-coordinate systems - edge-notched cards, optical coincidence, uniterm cards, computerised systems; automatic indexing - KWIC, KWOC, NEPHIS, PRECIS, etc.; citation indexes.

Information system structures. Components of an information system - input (selection of documents), indexing (creation of document representations and selection of search keys), catalogue/index (database of documents or document surrogates), user enquiry, search strategy (selection of search keys), matching of index and search keys, selection of documents, output; manual and computerised systems; user needs - current awareness, specific information, systematic/comprehensive information, user profiles, user studies; evaluation of retrieval systems - recall, precision, failure analysis, coverage, currency, cost, searching effort, Cranfield experiments, Aberystwyth index language tests, MEDLARS, SMART, etc.

Operational information systems. Types of information system - bibliographic and non-bibliographic; manual and computerised; national and international systems.

**Teaching methods**

Lectures, seminars, practical exercises with cataloguing codes, thesauri, classification schemes, etc; workshops.

**Comments**

This module is concerned firstly with the storage and retrieval of recorded information and provides an understanding of the principles upon which the organisation of knowledge is based. It does not set out to provide training in the use of particular cataloguing codes, indexing or retrieval tools but rather to illuminate and illustrate principles by considering the use of tools such as cataloguing codes, classification systems, thesauri, keyword and title indexes. Knowledge of these principles will be sufficient to facilitate the student's training in the specific techniques used in any specific information service or library.

Secondly, the module is concerned with the ways in which organised information can be stored and retrieved in information

systems, whether manual or automated. Using examples it looks at the components of a typical information system. It should be shown how user requirements affect the type of access which has to be built into an information retrieval system. Attention should also be paid to methods of evaluating such systems. Whenever possible, students should be able to use actual systems, or at any rate see them in operation on visits to local information centres or libraries.

The amount of time which can be devoted to this Module will determine the extent of practical work which can be devoted to the sub-modules. The number of classification schemes and dictionary catalogues which can be taken as examples will also depend upon availability of time. It would be possible to omit detailed consideration of information retrieval evaluation studies in the sub-module "Information system structures".

**Bibliography**


Jean Aitchison & Alan Gilchrist. Thesaurus construction: a practical manual. London: Aslib, 1972

Jacques Chaumièr. Systèmes informatiques de documentation. Paris: Enterprise moderne d'édition, 1972

A.C. Foskett. The subject approach to information. 4th. ed. London: Bingley, 1982

F. Wilfrid Lancaster. Information retrieval systems: characteristics, testing and evaluation. 2nd. ed. New York: Wiley, 1979

F.W. Lancaster & L.C. Smith. Compatibility issues affecting information systems and services. Paris: Unesco, 1983

Jennifer E. Rowley. Organising knowledge: an introduction to information retrieval. Aldershot: Gower, 1987

Ziauddin Sardar. Islam: outlines of a classification scheme. London: Bingley, 1979

P. Simmons & A. Hopkins. CCF: the common communication format. Paris: Unesco, 1984

C.J. Van Rijsbergen. Information retrieval. 2nd. ed. London: Butterworth, 1979

B.C. Vickery. Techniques of information retrieval. London: Butterworths, 1970

## C-07 INFORMATION SERVICES (3 credits)

### General objectives

To acquaint students with the range of library processes which are a pre-requisite for the operation of information services.

To familiarise students with the general and specialised in-house and external services for the provision of information.

### Specific objectives

To show students how to prepare various kinds of abstracts.

To understand how to compile a current awareness bulletin or operate an SDI service.

To know how to obtain translations and in general how to exploit foreign-language information sources.

To provide some practical experience of answering reference enquiries in the reference interview.

### Module content

User communities. Identification of user communities: information-seeking behaviour.

Library support processes (manual and computerised). Selection of material; acquisitions; periodical control; cataloguing and classifying - local, centralised, cooperative; circulation; inter-library loans; binding (both manual and automated processes should be covered).

Current awareness services. Abstracting techniques - types of abstract (indicative, informative, slanted, critical), abstract writing (style, content); abstracting bulletins - internal and external; indexing bulletins; display; current contents; periodical routing; SDI - manual and computerised (profiles, output, evaluation); selection of a current awareness service; costs; coverage; currency; staff requirements; internal versus external services.

Other in-house services. Translation services - locating existing translations, use of abstracts, translations centres, translations journals, translators (in-house, freelance, translation bureaux), machine and machine-aided translation; online information services; inter-library loans; reference services - the reference question, reference process, the reference interview, the search, presentation of findings, evaluation; information services - setting up the service, information store, giving out information, publicity and promotion, evaluation.

Services for user groups. Information services for industry, commerce, education and other specialist groups.

Community information services. Definitions; need for community information services; role of libraries; services to rural areas; case studies looking at services locally and in other countries such as USA and Britain.

International information services. Definitions; objectives; problems; case studies - AGRIS, INIS, DEVSIS, etc.

Evaluation of information services. User awareness; user satisfaction; allocation of resources to services; assignment of priorities; marketing within the organisation.

### Teaching methods

Lectures, seminars, case studies, visits.

### Comments

In the light of the needs of different kinds of user groups, this module considers the range of information services which might be provided by an information centre or library, including current awareness services, translation services and reference services. It also deals with the processes within the library which support these services. This involves looking at the various stages of document processing from initial selection for purchase through to the loan of the document. The student should be made aware of these processes in different kinds and sizes of libraries or information centres, and should be familiar with both manual and computerised procedures. This module is closely related to Module C-02, Information Users, which ideally should be completed before this module is undertaken. Consideration of automated library housekeeping processes is provided in Module C-09 and there is therefore no need to go into detail on this topic in this module.

"Community information services" could be dealt with very briefly if desired, especially if it is included as an elective module.

### Bibliography

Allan Bunch. Community information services: their origin, scope and development. London: Bingley, 1982

Donald Davinson. Reference service. London: Bingley, 1980

Denis Grogan. Practical reference work. London: Bingley, 1979

B. Gupta. A study of the language barrier in the production, dissemination and use of scientific and technical information with special reference to the problems of developing countries.

Paris: Unesco, 1985

D.A. Kemp. Current awareness services. London: Bingley, 1979

J.A. Large. The foreign-language barrier: problems in scientific communication. London: Deutsch, 1983

Carlos Victor Penna. The planning of library and documentation services. 2nd. ed. Paris: Unesco, 1970 (also available in French)

J.E. Rowley & C.M.D. Turner. The dissemination of information. London: Deutsch, 1978

Tefko Saracevic. A course in information consolidation. Paris: Unesco, 1985

Tom Whitehall, ed. Practical current awareness services from libraries. Aldershot: Gower, 1986

## C-08 ELECTRONIC DATA PROCESSING (2 credits)

### General objectives

To provide an introduction to the concepts and techniques of electronic data processing.

To provide an introduction to elementary programming.

### Specific objectives

To enable students to write simple programs in one high level language.

To make students familiar with a range of hardware which might be encountered in an information environment.

### Module content

Introduction to computing systems. Hardware - central processing unit, internal and external storage devices (RAM, ROM, disk, tape, cassette, optical disk, CD-ROM, etc.) , data input/output devices (keyboards, tape readers, card readers, OCR, printers, VDUs, microfiche, typesetting, etc.), mainframes, minicomputers and microcomputers - single user and multi-user; modems and accoustic couplers; bits, bytes and words; software - programming languages, compilers, interpreters, operating systems, systems software, program packages; graphics; networks.

Data processing. Basic processes - calculating, logical operations, sorting, storing, retrieving, merging, editing; file structures.

File design. Data files; data records; data fields; types of file; serial organisation; sequential organisation; direct-access organisation; indexed sequential file organisation; random file organisation; sorting and merging files; choice of file organisation; file security.

Programming for text manipulation. Introduction to programming - systems analysis, flow charting, high-level programming; debugging; program testing; program documentation (the choice of programming language will depend upon local facilities but it should be reasonably amenable to text and string processing, eg. PASCAL, COBOL).

Artificial intelligence. Definitions; role in information processing and interpretation; fifth generation systems; expert systems.

**Teaching methods**

Lectures, workshops, programming exercises, visits to computer installations.

**Comments**

Presents an overview of hardware and software before considering data processing. This module also provides an introduction to programming, although it is not intended that students should become expert programmers. Rather, it is meant to provide students with an appreciation of programming such as to facilitate understanding of Module C-09, Application of Information Technology", as well as to prepare them, as information professionals, to communicate with professional programmers. It should be as practical as possible, involving online programming exercises and exposure to a wide range of hardware and software. It would be most useful to visit computing installations in a wide range of information environments. Any student already competent in programming could be given information system-related programs to write and implement.

The time available for this Module will determine the amount of practical programming which can be included.

**Bibliography**

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Peter Laurie. Databases: how to manage information on your micro. London: Chapman & Hall, 1985

John Shelley & Roger Hunt. Computer studies: a first course. 2nd. ed. London: Pitman, 1984

V. Stibic. Personal documentation for professionals: means and methods. Amsterdam: North-Holland, 1980

Helen M. Townley. Systems analysis for information retrieval. London: Deutsch, 1978

## C-09 APPLICATION OF INFORMATION TECHNOLOGY (4 credits)

### General objectives

To provide a knowledge of information technology and its application in the design, development and operation of library and information systems.

To familiarise students with the use of computers in libraries and information units.

To provide an understanding of the introduction and running of automated library and information services.

### Specific objectives

To provide familiarity with at least one information retrieval package.

To provide at least demonstrations of, if not practical work with, videotex and expert systems.

To give practical experience of using centralised or cooperative cataloguing facilities.

To enable students to use one commercial wordprocessing package for simple text manipulation operations.

### Module content

Information technology. Historical development; impact on society; the Information society.

Information storage and retrieval systems. Batch mode and online retrieval systems; the online industry; in-house information retrieval systems; database management systems; downloading; SDI systems - online versus batch mode, commercial versus in-house; videotex; expert systems; interactive video systems - CD-ROM; convergence of technologies.

Housekeeping operations. Acquisitions; serials control; cataloguing - cooperative and centralised systems, retrospective conversion; online networks (eg. OCLC); COM catalogues; OPACS - user interface, access points; circulation control - files, data collection and processing, data-capture devices; turnkey systems; integrated library systems; inter-library loans;

Electronic publishing. Computer typesetting; electronic journals; videodisk technology; the electronic library.

Office automation. Local area networks (see also module C-10); electronic mail; electronic noticeboards; file servers; word processing; spreadsheets; reprographics - photocopying,

xerography.

Expert systems. Artificial intelligence; intelligent knowledge-based systems.

Computers and language manipulation. Automatic indexing; automatic abstracting; machine translation - full machine translation, machine-assisted translation, multilingual terminology data banks; processing non-Roman scripts.

Audio visual technologies. Materials (as listed in Module C-05, Information sources); equipment - slide projectors, filmstrip projectors, microform readers, cine projectors, tape recorders, tape slide equipment, videotape equipment, record players, compact disk players, videodisk players, televisions (analogue and digital); selection of equipment; storage and retrieval of data - labelling, browsing, security, packaging.

Human factors. Impact of information technology on organisations and society; health aspects; the environment - computer workstations (vision, dimensions, seating), social use of space, lighting, noise, heat; software psychology - languages, user-friendliness, response time; displaying information - eye movements, letter recognition, readability; management of automation; training; maintenance; copyright; freedom of access; data protection; standards.

Planning, designing and implementing automated library systems. Definition of objectives; feasibility study; design stage - selection of hardware and software; special requirements of different types and sizes of library and information unit; concept of the multi-media library; implementation phase - staff and user aspects (education and training); evaluation; international information systems.

## Teaching methods

Lectures, seminars, demonstrations, workshops, visits. Whenever possible, students should be given the chance to use software packages themselves; failing this, opportunities should be provided to see computer installations in the information sector.

## Comments

This module is intended to show how the various technologies - computer, audio-visual and telecommunications - are being used in information handling. It should follow on from Module C-08, Electronic Data Processing, which has introduced the theoretical aspects of electronic data systems, and be taught concurrently with Module C-10, Telecommunications and Networking in Information Systems. The module should incorporate as much practical hands-on work as is possible, particularly in the areas of information retrieval systems and word processing; whenever

possible, word processing facilities should be provided for students so that they can gain keyboarding skills whilst preparing assignments for any of the modules. Practical searching of external online hosts is better concentrated in Module C-05, Information Sources.

The sub-module on "Computers and language manipulation" is less important than the others and could be ommited. Emphasis in "Audio-visual technologies" as between the more traditional and the newer technologies will be governed by local needs and resources.

## Bibliography


P.A. Bennett et al. Multilingual aspects of information technology. Aldershot: Gower, 1986

K. Dowlin. The electronic library. New York: Neal Schuman, 1984

Beth Krevitt Eres et al. A decision maker's guide to videotext and teletext. Preliminary edition. Paris: Unesco, 1986

T. Forester, ed. The information technology revolution. Oxford: Blackwell, 1985

Richard Fothergill & Ian Butchart. Non-book materials in libraries: a practical guide. 2nd. ed. London: Bingley, 1984

Ian Lovecy. Automating library procedures: a survivor's handbook. London: Library Association, 1984

David J. Osborne. Computers at work: a behavioural approach. Chichester: Wiley, 1985

José María Berenguer Peña. Guía de innovaciones tecnológicas para archivos, bibliotecas y centros de documentación. Madrid: Asociación Nacional de Bibliotecários, Archiveros, Arqueólogos y Documentalistas, 1981

Dennis Reynolds. Library automation: issues and applications. New York: Bowker, 1985

J.E. Rowley. Computers for libraries. 2nd. ed. London: Bingley, 1985

Lucy A. Tedd. An introduction to computer-based library systems. 2nd. ed. Chichester: Wiley, 1984

Peter Zorkoczy. Information technology: an introduction. 2nd. ed. London: Pitman, 1985

## C-10 TELECOMMUNICATIONS AND NETWORKING (1 credit)

### General objectives

To provide an overview of telecommunications and networking applications in information processing, retrieval and use.

To familiarise students with the various kinds of network structures and with electronic means of information dissemination.

### Module content

The fundamentals of telecommunications. Representation of information; transmission of signals - analogue and digital transmission media (twisted wire, co-axial cable, fibre optics, microwave, satellite); noise; bandwidth and frequency; modulation and multiplexing; gateways; compatibility and standards; historical development; economics of telecommunication: data communication services.

Hardware. Computers; modems; acoustic couplers; telephone; telex; facsimile machines.

Wide area networks. Definitions and types; PSTN; telex; digital communication networks; circuit, message and packet switching services; value-added carriers; teletex; networks in operation (eg Telenet, Tymnet, Arpanet).

Local area networks. Definitions; topologies; transmission media; standards; applications in libraries and information units; office automation; examples of LANs - Ethernet, Cambridge Ring, etc.; PBX.

Electronic dissemination of information. Electronic mail - definition, types; electronic document ordering and delivery - facsimile transmission - transmission media; teleconferencing - audio and video, computer conferencing.

Management of telecommunications. Planning; implementation; evaluation; legislation; industrial lobbies; international telecommunications; data flows; transborder data flow; privacy.

### Teaching methods

Lectures, seminars, demonstrations and visits.

### Comments

Presents an introduction to basic telecommunication concepts before considering the types of wide area and local area networks which are used in the information sector. Examples of actual

networks are included, and these should be based upon locally available systems. The module also looks at the various ways of disseminating information electronically. This module is closely related to Module C-09, Application of information technology, and should ideally be taught concurrently with it.

The depth of technical discussion, especially in the first sub-module "The fundamentals of telecommunications" will depend upon the time available for this module.

Bibliography

V.E. Cheong & R.A. Hirschheim. Local area networks: issues, products and development. Chichester, Wiley, 1983

Mel Collier. Local area networks: the implications for library and information science. London: British Library, 1984

Kathleen Kelleher & Thomas B. Cross. Teleconferencing: linking people together electronically. Englewood Cliffs: Prentice-Hall, 1985

Donald W. King, ed. Telecommunications and libraries: a primer for librarians and information managers. White Plains: Knowledge Industry, 1981

James Martin. Computer networks and distributed processing: software, techniques and architecture. Englewood Cliffs: Prentice-Hall, 1981

Charles T. Meadow & Albert S. Tedesco. Telecommunications for management. New York: McGraw-Hill, 1985

Peter Vervest. Electronic mail and message handling. London: Pinter, 1985

Peter Zorkoczy. Information technology: an introduction. 2nd. ed. London: Pitman, 1985

## C-11 MANAGEMENT OF INFORMATION SYSTEMS AND SERVICES
(4 credits)

### General objectives

To introduce the theories and principles of management.

To consider their application in the management of information systems and services.

To develop competencies and leadership qualities which can be applied in the overall information environment.

### Module content

Organisational theory. Organisational structures: group dynamics; behavioural approach; systems approach.

Management theory. Schools of management - classical, scientific, system, human behaviour, social system, decision theory, general systems, contingency theory.

Planning process. Factors in planning; assessment of needs - data collection and analysis; planning techniques; establishing and implementing objectives - formulating objectives, levels of objectives (broad general mission, organisation-wide, specific objectives, activities), management by objectives; policy making; decision-making; conflict negotiation; risk analysis; trade-off analysis; feasibility analysis; planning cycle; control and evaluation.

The management of change. The change process; effects of new technology; strategies for change; office automation.

Personnel management. Theories; styles of management; staffing requirements; manpower planning; job analysis; job description; staff recruitment, selection and deployment; staff training and development; interviewing skills; working relationships - supervision, control, leadership (formal and informal approaches); motivation, the managerial grid; industrial relations; performance evaluation; grievance procedures.

Managerial communication. Formal and informal; interpersonal; intergroup; interorganisational.

Stock management. Stock policy; selection and acquisition; stock maintenance - editing, withdrawal, relegation, replacement; conservation.

Resource management. Budgeting for planning and control; fundamentals of budgeting processes; budgeting methods - line by line, lump sum, performance, PPBS, zero-based; dynamic environments; capital expenditure planning; costs and work patterns; quality standards and performance measurement;

quantitative methods; cost effectiveness analysis; cost benefit analysis; time and motion study; productivity; operations research; cost recovery; information for management decision-making - information flows, management information systems.

Planning library buildings. Location, space planning, furnishings, environmental controls, standards and work flows, ergonomics.

Planning local, national and international information systems. Concepts of development; levels of development; development indicators - economic, social, technological, industrial; development plans; planning processes; factors affecting development of information infrastructures.

## Teaching methods

Lectures, supported by seminars, case studies, role-playing, use of computerised packages (eg, spreadsheets).

## Comments

This module is intended to show how management theories can be applied to the management of information systems and services, and to look at various aspects of the management process. The importance of needs assessment, objectives and policy planning should be emphasised. The successful manager must be able to deal with staff at both a subordinate and a superior level in the organisation, and to handle resource problems, especially those related to finance. The module also considers space planning for libraries and information centres, ergonomics and the planning of local, national and international information systems. It is best taught towards the end of the programme after students have already considered the design and operation of information systems and services. It is related to Module C12, Economics and marketing of information, with which it could be merged if prefered.

"Management theory" could be dealt with quite briefly, but the other sub-modules are all important.

## Bibliography

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John Cowley. Personnel management in libraries. London: Bingley, 1982

Blaise Cronin, ed. Information management: from strategies to action. London: Aslib, 1985

Arthur Curley & Dorothy Broderick. Building library collections. 6th. ed. Metuchen: Scarecrow Press, 1985

G. Edward Evans. Management techniques for librarians. 2nd. ed. New York: Academic Press, 1983

Noragh Jones & Peter Jordan. Staff management in library and information work. Aldershot: Gower, 1982

Donald W. King, ed. Key papers in the design and evaluation of information systems. White Plains: Knowledge Industry, 1978

F.W. Lancaster. The measurement and evaluation of library services. Arlington: Information Resources Press, 1977

Donald Mason. Information management. Stevenage: Peregrinus, 1978

J. Stephen Parker, ed. Aspects of library development planning. London: Mansell, 1983

C.V. Penna, D.J. Foskett & P.H. Sewell, eds. National library and information services: a handbook for planners. London: Butterworths, 1977

Ruth J. Person, ed. The management process: a selection of readings for librarians. Chicago: American Library Association, 1983

Stephen A. Roberts. Cost management for library and information services. London: Butterworths, 1985

Robert D. Stueart & John Taylor Eastlick. Library management. 2nd. ed. Littleton: Libraries Unlimited, 1981

Georges Van Slype. Conception et gestion des systèmes documentaires. Paris: Editions d'Organisation, 1977

Kenneth Whittaker. Systematic evaluation: methods and sources for assessing books. London: Bingley, 1982

## C-12 ECONOMICS AND MARKETING OF INFORMATION (2 credits)

### General objectives

To ensure a sound and critical understanding of the economic foundations of the information sector, and the principles and techniques of marketing as they relate to information activities.

To provide a critical understanding of the functions of economic analysis as a tool in the planning and management of information and library services.

To demonstrate the application of marketing techniques to various information services and utilities.

### Module content

Economics of information. Economic analysis models and their application to the information industry; information as a commodity; information as a resource; transborder data flows; barriers to information access - economic, political, legal, linguistic, cultural.

Market analysis. Techniques and tools of market analysis - collection of data, statistical analysis, forecasting, models of information markets; structure of domestic and external information markets; financial modelling.

Information market environment. Information markets in Europe, North America, South America, Africa, Asia and Australasia; information marketing and the new technologies; public and private sector markets; cultural attitudes and marketing.

Strategies for marketing of information products. Planning; designing products and services to meet user needs; market segmentation; new product development; pricing policies; costing; internal and external factors affecting market behaviour; information use promotion - advertising; re-packaging of information products; value-added process in information production, transfer and use.

### Teaching methods

Lectures, seminars, case studies.

### Comments

This module, related to Module C-11, Management of Information Systems and Services", concentrates upon the economics of information and the application of economic analysis models to the information industry. It also considers the marketing of information and domestic and external information markets. This

should be seen as an important aspect of the programme and students should be aware of marketing strategies as well as the general economic basis upon which information centres libraries and other information sector enterprises operate. It is therefore better taught as a separate module rather than being incorporated into a module with other management aspects.

"Information market environment" allows for some measure of specialisation in choice of markets, especially if time is short.

## Bibliography


Blaise Cronin, ed. The marketing of library and information services. (Aslib Reader, vol. 4). London: Aslib, 1981

Malcolm Galatin & Robert D. Laiter, eds. Economics of information. London: Nijhoff, 1981

Stephen A. Roberts, ed. Costing and the economics of library and information services. London: Aslib, 1984

Bryan Yates, ed. Marketing of information services: Unesco Regional Workshop, Canberra, December 1983. Canberra: National Library of Australia in association with the Australian National Commission for Unesco, 1983

## E-13 DESIGN OF COMPUTER-ASSISTED INFORMATION SYSTEMS

### General objectives

To familiarise students with the physical organisation of data into files.

To develop an understanding of how an information system is designed for a specific environment.

### Specific objectives

To provide a programming competency in one language and to expose students to other languages and programming techniques.

### Module content

Data structures. Types of data structure - arrays, linked lists, stacks, B-trees; file structures - sequential files, inverted files, hashed files, ISAM; organisation of files in a database; data models - relational, hierarchical, network; data manipulation - interrogation, updating.

Programming. Practical programming in one language and an introduction to other languages and programming techniques.

Information systems. Basic concepts of information systems; design of information systems - user needs assessment, development of design specifications, selection of hardware and software; determination of record structure; determination of indexing approach; determination of search procedures; system-user interface; structure of records, files, databases.

Evaluation of information systems. Testing; evaluation methods - recall/precision, response time; human-behavioural problems - user reactions, ergonomics.

### Teaching methods

Lectures, workshops including hands-on use of retrieval systems, practical design of an information system.

**Comments**

This module involves a detailed investigation of data structures in order that students should be able to understand the advantages and disadvantages of different data structures for information retrieval systems. The larger problems of complete system investigation, design and implementation are examined together with a consideration of evaluation techniques and human-behavioural problems implicit in technological innovation. The module also offers students the opportunity to build upon the elementary programming skills acquired in Module C-08, Electronic Data Processing. It is not intended to produce professional programmers as such but rather to provide students with a sound grasp of programming techniques and an ability to communicate with programming staff. Nevertheless, students completing this module should be capable of writing small-scale programs of use in an information environment.

The amount of practical programming undertaken will be related to the time available for this Module.

**Bibliography**

D.E. Avison. Information systems development: a database approach. Oxford: Blackwell Scientific, 1985

Paul F. Burton & J. Howard Petrie. The librarian's guide to microcomputers for information management. Wokingham: Van Nostrand Reinhold, 1986

Owen Hanson. Design of computer data files. London: Pitman, 1982

F.W. Lancaster & E.G. Fayen. Information retrieval on-line. Los Angeles: Melville, 1973

Gerard Salton. Automatic information organisation and retrieval. New York: McGraw-Hill, 1968

B.C. Vickery. Information systems. London: Butterworths, 1973

## E-14 SECTORAL/SUBJECT ORIENTED INFORMATION SOURCES AND SYSTEMS

### General objectives

To familiarise students with information environments, categories of users and their information needs in a particular sector or subject area.

To identify information sources and services to meet these needs.

To become conversant with the theory and practice of identifying, selecting, processing and organising this information, and providing an information system based upon it.

To prepare students for the task of planning, designing, implementing, managing and evaluating such an information system.

### Module content

Scope and development trends in the sector/subject. Political, economic and technological factors as they affect the sector/subject; research trends; relationship with other sectors/subjects; place of the sector/subject in the national development plan.

Information resources. Generation of information; major information sources; dissemination patterns; role of formal and informal channels; institutional structure - centres of excellence, role of national, regional and international information systems.

Information users. User categories; user needs.

Information systems. Planning, implementation and management; integration into national, regional and international systems; marketing and use promotion; evaluation.

### Teaching methods

Lectures, seminars, case studies, projects.

### Comments

This module looks at the ways in which the information needs and information resources of a particular sector or subject field can be identified and then matched by the provision of an information system. It deals with the planning, implementation and evaluation of such an information system, including such aspects as marketing and management. This module builds upon many of the core modules but provides an opportunity to consider a specific

user community and special information resources which might be particularly relevant to the local environment.

## Bibliography

[It is not possible to provide a bibliography for this option as it will depend upon the specific sector or subject which is chosen]

## E-15 PLANNING AND DESIGN OF BUILDINGS AND FACILITIES FOR INFORMATION CENTRES AND LIBRARIES

### General objectives

To provide an understanding of the spatial implications of library service.

To familiarise the student with the design procedures for and characteristics of buildings and facilities, illustrated by reference to a range of actual libraries and information centres.

### Specific objectives

To prepare students for a constructive contribution to any planning opportunities in which they may become involved.

### Module content

History of library buildings. Classical Antiquity; Dark Ages; Middle Ages; Renaissance and Baroque; nineteenth century.

Design procedure. Functions and services of libraries and information centres; planning process; planning team; the plan; exterior design; costs; consultants; brief to architect; design standards; aesthetics; flexibility; computer-aided design.

Interior layout and design. Interior planning; equipment; furnishings; guiding; communication - traffic patterns.

Users' needs. Site; access; study facilities - seating, tables, chairs, carrels; light, comfort - coffee bars, toilets; special categories of user - children, the handicapped, the elderly.

Staff needs. Issue counter; reference area; readers' advisers; technical services; computing facilities; staff offices; office furniture; staff common room.

Storage and access. Books - closed access shelving, display shelving, children's section, oversize shelving; periodicals; newspapers; music scores; pamphlets; prints; maps, plans and charts; atlases; non-print material - microforms, films, filmstrips, videotapes, slides, audio tapes, gramophone records, software; catalogues.

Environmental services. Lighting; heating; cooling; ventilation; humidification; purification; air conditioning - effect on people and materials; noise control; maintenance.

Types of building (twentieth century). Storage libraries; national reference libraries; academic libraries - university and

polytechnic, college, school; special libraries; information centres; hospital libraries; public libraries; learning resource centres.

### Teaching methods

Lectures, seminars, case studies, practical exercises in layout planning, visits.

### Comments

This module is intended to supply the student with information about the planning and design of buildings which will allow close cooperation between information specialist and architect. It should contain a significant practical element and students should be given the opportunity to produce designs themselves, using layout planning equipment such as Modulex or, if possible, computer-aided design software. If possible it would be useful to include a few teaching sessions by working architects with experience of library buildings. In such a visual subject it is important to use audio visual materials in teaching whenever practical.

### Bibliography


Michael Brawne. Libraries: architecture and equipment. London: Pall Mall Press, 1970

Aaron Cohen & Elaine Cohen. Designing and space planning for libraries: a behavioural guide. London: Bowker, 1979

Jacqueline Gascuel. Un espace pour le livre. Paris: Promodis, 1984

Philip D. Leighton & David Weber. Planning academic and research library buildings. 2nd. ed. New York: McGraw-Hill, 1985

William S. Pierce. Furnishing the library interior. New York: Dekker, 1980

Hal B. Schell, ed. Reader on the library building. Englewood Cliffs: Microcard Editions Books, 1975

Godfrey Thompson. Planning and design of library buildings. 2nd. ed. London: Architectural Press, 1977

## E-16 ONLINE SEARCHING

### General objectives

To familiarise students with the theory and practice of online searching using commercially available systems and databases.

To introduce students to the management implications of introducing online searching into the information centre or library.

### Specific objectives

To provide practical online searching skills using several systems and a range of databases so that students will have acquired a basis upon which they can build their future professional work.

### Module content

The online industry. Vendors; database producers; telecommunication networks; users of online systems; historical development of online searching; present and future developments - use of microcomputers, downloading, impact of CD-ROM, intelligent front ends; videotex services; online market; online and developing countries; copyright.

Search strategy. Record structures on bibliographic and non-bibliographic databases; file structures (use of inverted files); controlled term versus free text searching; use of special features (for example ZOOM and Questquorum on ESA IRS); construction of search strategies; evaluation of search strategy.

Searching. Searching on different systems - pre-search interview, selection of databases/vendors, strategy construction, the search, analysis and presentation of results (searches should be carried out for different "clients" in different subject areas on a variety of hosts and databases); comparison of online and manual searches.

Management aspects. Planning an online service; setting up a service - choice of equipment, vendors, staff selection, documentation; charging policy; publicising the service; evaluation of the service; effects on other library operations; online survey findings on use; intermediary versus end-user searching.

Training aspects. Selection of staff for training; training courses - vendors, database producers, professional organisations, library schools; in-house versus external training courses; training aids - vendor and database documentation,

textbooks, journals, audio-visual aids, computer simulations and emulations; continuing training.

### Teaching methods

Seminars, demonstrations, practical searching using both computer simulations and emulations, and real commercial online systems.

### Comments

This module builds upon the brief introduction to online searching offered in Module C-05, Information Sources, in which students have looked at the components of an online system and acquired some knowledge of the command language of one online system. An emphasis should be placed upon practical searching skills on several commercially-available systems and over a wide range of bibliograhic and non-bibliographic databases (numerical, directory-type and full-text). This will involve ideally some considerable exposure to hands-on searching. The module also considers in some depth managerial and training aspects. Students taking this option should be given the opportunity to do searches for other students or faculty and to present their results to the client for evaluation.

### Bibliography

C.J. Armstrong & J.A. Large, eds. A manual of online search strategies. Aldershot: Gower, 1987

Ching-chih Chen & Susanna Schweizer. Online bibliographic searching: a learning manual. New York: Neal-Schuman, 1981

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Stephen P. Harter. Online information retrieval: concepts, principles, and techniques. Orlando: Academic Press, 1986

W.M. Henry et al. Online searching: an introduction. London: Butterworths, 1980

Charles T. Meadow & Pauline Cochrane. Basics of online searching. New York: Wiley, 1981

David I. Raitt, ed. Introduction to online information systems: a collection of the significant papers in the field of the online retrieval of information. Oxford: Learned Information, 1984

## E-17 HEALTH AND WELFARE LIBRARY AND INFORMATION SERVICES

### General objectives

To provide an understanding of information systems and services as applied to the medical, health and welfare areas.

To gain insights into problems in information studies which can be explored in more detail than is possible in the core modules.

### Module content

Structure of medicine and of health care communities. Structure of medicine and related disciplines and professions; the national health service; the social services; private and public health services; information for management.

User needs. Needs of staff and students - medical, nursing, administrative and clerical; needs of sick and disabled people; psychology of the sick; categories of disablement; sick and disabled children; the mentally ill.

Libraries and information centres. History of medical and hospital libraries and information centres; standards and objectives for library services; types of library and information centre; networks and cooperation; patterns of information provision; staffing - selection, training, use; professional associations; volunteers and voluntary organisations; library accommodation - planning libraries for the disabled, the library in the hospital; special materials and equipment.

Sources of information. Journals, research reports, patents, standards, trade literature, theses, audio-visual materials; bibliographical control - bibliographies, indexing and abstracting journals, online databases; national and international information services.

Health sciences. Stock selection; information services - reference services, inter-library loans, current awareness, translations services, online services; consumer health information; patient information; computerisation of health information - expert systems.

Special services. Libraries for the blind and partially sighted; toy libraries; services to the housebound; the disabled student; services for the mentally subnormal.

Special problems. Books for patients; reading aids and other equipment; bibliotherapy and therapeutic uses of books and other media.

National information policies. Development of national information policies in the health and welfare area; exploitation of local information; access to external information.

**Teaching methods**

Lectures, seminars, case studies, visits to local hospital, health and welfare libraries and information centres, projects.

**Comments**

This module gives an opportunity for students to study one complex area of library and information service needs and provision, and enables them to bring together within the context of a definable community all aspects of information services. It also provides a foundation for students wishing to enter this area of information work.

**Bibliography**

Eleanor Francis Brown. Bibliotherapy and its widening applications. Metuchen: Scarecrow Press, 1975

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M.E. Going, ed. Hospital libraries and work with the disabled in the community. 3rd. ed. London: Library Association, 1981

D.A. Matthews & F.M. Picken. Medical librarianship. London: Bingley, 1979

L.T. Morton & S. Godbolt. Information sources in the medical sciences. 3rd. ed. London: Butterworth, 1984

J. Welch & T.A. King. Searching the medical literature: a guide to printed and online sources. London: Chapman & Hall, 1985

## E-18 AGRICULTURAL LIBRARY AND INFORMATION SERVICES

### General objectives

To provide an understanding of information systems and services in the agricultural area.

To gain insights into problems in information studies which can be explored in more detail than is possible in the core modules.

### Module content

Structure of agriculture and agricultural communities. Structure of agriculture and related disciplines and professions; role of agriculture in the national economy - state and private agriculture, large-scale and small-scale operations, international aspects; agricultural information for development.

User needs. Needs of users - large-scale farmers, medium-scale farmers, small-scale farmers, research organisations and research staff, students; information flows and communications patterns.

Sources of information. Journals, research reports, trade literature, patents, theses, standards, audio-visual materials; viewdata services; bibliographic control - bibliographies, indexing and abstracting journals, online databases, international information services.

Libraries and information centres. History of agricultural libraries and information centres; standards and objectives for library service; types of library and information centre; networks and cooperation; international cooperation - AGRIS; patterns of information provision; staffing, training, use; professional associations; international organisations - role of FAO.

Agricultural services. Stock selection; information services - reference services, online services, current awareness services, translations services, inter-library loans.

National information policies. Development of national information policies in agriculture - objectives, problems (exploitation of local information, illiteracy, scattered user populations); access to external information; role of government; role of international organisations.

### Teaching methods

Lectures, seminars, case studies, projects, visits to local agricultural libraries and information centres.

## Comments

This Module gives an opportunity for students to study a complex area of library and information service needs and provision, and enables them to bring together within the context of a definable community all aspects of information services development and operation. It also provides a foundation for students wishing to enter this area of information work.

## Bibliography

M.J. Blackie & J.B. Dent, eds. Information systems for agriculture. London: Applied Science Publishers, 1979

Olga Lendvay. Primer for agricultural libraries. 2nd. ed. Wageningen: Centre for Agricultural Publishing and Documentation, 1980

G.P. Lilley, ed. Information sources in agriculture and food science. London: Butterworth, 1981

## E-19 AUDIO-VISUAL STUDIES

### General objective

To provide an appreciation of audio-visual materials and their value as sources of information.

### Specific objective

To give students a specialised knowledge to help them in the development and organisation of multimedia collections.

To provide familiarity in using various kinds of audio-visual equipment amd material.

To enable students to produce an audio-visual programme using at least one kind of medium.

### Module content

Media materials. Storage and handling in general; range of media likely to be found in libraries (for media see list in Module C-05) - physical format, production details, type of information carried, handling (including preparation for library use), storage, conservation, reproduction details, library uses.

Media equipment. Selection and evaluation; an examination of equipment (for equipment, see list in Module C-09) under following headings - physical description, mode of operation, use in library context, operational instructions, maintenance.

Organising media development in libraries. Needs and objectives - identification of target audience; priorities; choice of medium; education and training - staff education and training, user education; physical access to information - ease of browsing, loan, presentation to individuals and groups; supply of media equipment - retailers, equipment catalogues; current and future developments - role of national organisations, case studies in different countries, technical developments.

Production and use of multimedia materials. Overhead transparancies; slides; audio recordings; tape slide programmes; video programmes; interactive video - use of authoring software, customising generic videodiscs; evaluation of productions; role of media production services.

Planning of multimedia collections. Standards; planning requirements - departmental versus centralised, space, access, lighting, user facilities, staff facilities, new buildings.

## Teaching methods

Lectures, workshops, seminars, visits.

## Comments

This module offers students the opportunity to study the area of audio-visual materials in much more detail than is provided either in Module C-05, Information Sources, or Module C-09, Application of Information Technology. It explores the view that the librarian or information worker, to be effective, must combine traditional printed and other sources of information with an increasing range of audio-visual materials, including interactive video. It should complement the students' knowledge of these printed sources gained in the core modules. Practical workshop sessions should constitute an important element of this module; students should be given the opportunity to handle as many kinds of equipment as possible so that they will not be daunted when faced with similar equipment in a working environment. In the "Production and use of multimedia materials" sub-module, students should choose one medium in which to specialise and produce a short demonstration programme

## Bibliography

James Cabeceiras. The multimedia library: materials selection and use. New York: Academic Press, 1978

John W. Ellison, ed. Media librarianship. New York: Neal-Schuman, 1985

Richard Fothergill & Ian Butchart. Non-book materials in libraries: a practical guide. 2nd. ed. London: Bingley, 1984

P.T. McNally. Non-book materials. 2nd. ed. Melbourne: MacMillan, 1981

E. Parsloe, ed. Interactive video. Wilmslow: Sigma Technical Press, 1983

Anthony Thompson. Guidelines on the production and use of audiovisual aids in library and information science teaching. Paris: Unesco, 1983 (also available in French and Spanish)

## E-20 PRINTING, BOOKBINDING AND CONSERVATION

### General objectives

To provide an understanding of the principles of conservation based on a knowledge of printing, bookbinding and papermaking.

To explain some of the latest developments in printing technology, particularly those which are connected with developments in information technology.

### Module content

Printing. Type; composition - hand, machine (linotype, monotype); photocomposition - fotomatic, monophoto, CRT character generation, digital setting; printing machines - letterpress, lithography, gravure; proofs - proof reading; illustrations - line, half tone, full colour.

Book design. Principles of typography - type design, page layout and design, special needs of prelims and end matter.

Papermaking. Hand; machine; raw materials.

Bookbinding. Handbinding; machine binding; unsewn binding; other special forms of binding - pamphlets, spiral binding, etc.; re-binding and reinforcing.

Conservation. Component materials of books; causes of deterioration - chemical, physical, biological; methods of retarding deterioration; storage conditions; disaster plans; repairs to books and documents; special needs of non-paper media - sound recordings and magnetic tape, film, photographs.

### Teaching methods

Lectures, seminars, practical printing on a hand press, elementary bookbinding, visits.

### Comments

This module is intended to provide students with an awareness of the physical construction of books and other printed information media sufficient to enable them to make informed decisions on problems relating to the deterioration of stock. It should include practical exposure to as much of the technology as possible, both in workshops and through visits to relevant outside organisations.

**Bibliography**

Jean Jennett. The making of books. 5th. ed. London: Faber & Faber, 1973

Marshall Lee. Bookmaking: the illustrated guide to design/production/editing. 2nd. ed. New York: Bowker, 1979

Carolyn C. Morrow. Conservation treatment procedures. Littleton: Libraries Unlimited, 1982

A.H. Phillips. Handbook of computer-aided composition. New York: Dekker, 1980

Susan G. Swartzburg. Preserving library materials: a manual. London: Scarecrow Press, 1980

Hugh Williamson. Methods of book design: the practice of an industrial craft. 3rd. ed. London: Yale University Press, 1983

**Titles of other possible elective modules**

These elective modules presented above are, of course, only a sample of the broad range of subjects which could profitably be incorporated into a postgraduate programme in information studies. Elective courses offer an opportunity for staff and students alike to pursue studies in areas of special interest; as long as a strong core of essential subjects is presented in the programme, the electives can be used to exploit these individual enthusiasms and interests. Other elective modules which might well be included in a programme, depending upon the availability of staff willing and able to teach them and students to subscribe to them are:

Linguistics and information studies

Community information services

Programming for text handling

Psychology and information studies

Communications and information studies

Epistemology and information studies

Industrial library and information services*

Government library and information services*

Education and training for information studies

* The structure of these electives can follow that of E-17 and E-18.

## APPENDIX I AN ABBREVIATED CURRICULUM IN INFORMATION STUDIES

The curriculum as described in the main part of this document assumes a programme of sixty weeks' duration. Such a programme may not be feasible for all institutions, and therefore this Appendix outlines the changes which could be made to that curriculum if a teaching programme of only thirty weeks is available.

As in the main curriculum, this Abbreviated Curriculum assumes twelve hours' class contact per week, giving a total of 360 formal teaching hours in the programme. The twelve core modules in the main curriculum are again included in this abbreviated curriculum, but in a reduced form. They account for eleven credits; the thirty-week programme includes four options of two credits (the same weighting as in the main curriculum), completing the eighteen credits assigned to the programme. As in the main curriculum, one credit represents twenty class contact hours.

This Abbreviated Curriculum is described below in terms of its differences from the curriculum set out in the main body of this document. When using this Appendix, therefore, reference must be made to the main module schedules which include general and specific objectives, sub-modules and individual topics with each of them, teaching methods, comments on the module and a selective bibliography.

## C-01 INFORMATION IN ITS SOCIAL AND COMMUNICATIONS CONTEXT

(1 credit)

This Module retains its General Objectives of providing an overview of the entire programme, but is halved in length. The final sub-module "The field of information studies" could be dropped, and the education and training topics in the penultimate sub-module also deleted. The historical elements of "The agencies of information transfer" should be treated very briefly and "National and international information policies" must be confined to an overview. Most attention should be centred upon sub-modules 2 and 3.

## C-02 INFORMATION USERS

(1 credit)

There are no changes to this Module.

## C-03 QUANTITATIVE METHODS

(1/2 credit)

This Module is drastically reduced in length, and its General Objective is now "To introduce students to bibliometric methods and techniques used in information work." In the ten hours available, little beyond this can be expected.

## C-04 RESEARCH METHODS

(1/2 credit)

The treatment of "Survey research methods" is severely curtailed; any practical work involving, for example, design of questionnaires, is excluded. Instead, a brief overview of research methods, including surveys, is followed by the sub-module, "The research proposal."

## C-05 INFORMATION SOURCES

(2 credits)

Coverage of bibliographical and information sources can be restricted to one of the following broad areas: Pure and applied sciences; Social sciences; Humanities. The sub-module on "Online information" should be retained, but students would only carry out a brief online search as an introduction to online services.

The sub-module on "Audio-visual sources of information" can do no more than briefly discuss the main features of each medium.

## C-06 INFORMATION STORAGE AND RETRIEVAL SYSTEMS

(2 credits)

The sub-module "Content analysis" should only consider one example of a dictionary catalogue and classification scheme in order to illustrate underlying principles. Detailed study of evaluation methods could be dropped from "Information system structures" and "Operational information systems" would be restricted to overviews.

## C-07 INFORMATION SERVICES

(1 credit)

This Module is considerably reduced in time from 60 hours in the main curriculum to 20 hours. Practical exercises in "Current awareness services" should be excluded and "Other in-house services" either omitted altogether or only briefly treated. The sub-module on "Community information services" can be excluded.

## C-08 ELECTRONIC DATA PROCESSING

(1/2 credit)

This Module should largely concentrate on the first sub-module, "Introduction to computing systems". Practical programming would be completely excluded.

## C-09 APPLICATION OF INFORMATION TECHNOLOGY

(3 credits)

Students could be given an overview of the entire Module before choosing to specialise in TWO of the following sub-modules: Housekeeping; Electronic publishing; office automation; expert systems; audio-visual technologies. The sub-module on "Computers and language manipulation" could be excluded but "Human factors" and "Planning, designing and implementing automated systems" should be taken by all students.

## C-10 TELECOMMUNICATIONS AND NETWORKING IN INFORMATION SYSTEMS

(1/2 credit)

The entire Module should be included, except that "The fundamentals of telecommunications" should be as brief as possible, only including such terminology as is essential to understand the later sub-modules.

## C-11 MANAGEMENT OF INFORMATION SYSTEMS AND SERVICES

(3 credits)

The main savings in time should be found by deleting "Planning library buildings" (which can be taken as an elective), treating "Management theory" very briefly and reducing depth of coverage in "Resource management".

## C-12 ECONOMICS AND MARKETING OF INFORMATION

(1 credit)

"Information market environment" can be treated very briefly; other sub-modules should be treated more generally than in the main curriculum.

## ELECTIVES

Only ONE to be chosen, but this one should be allowed as much time as in the main curriculum.

## APPENDIX II A SPECIALISED CURRICULUM IN INFORMATION TECHNOLOGY

30 weeks (18 credits)

(If a sub-module alone is listed then all the topics in that sub-module in the main curriculum should be included. If any changes are to be made to the topics, then these are indicated below.)

### C-01 INFORMATION IN ITS SOCIAL AND COMMUNICATIONS CONTEXT

(1 credit)

The nature of information

The information cycle

The agencies of information transfer
Exclude historical development

National and international information policies
Exclude education and training

The field of information studies

### C-02 INFORMATION USERS

(1/2 credit)

Categories of information user

Use of information

User studies

### C-03 QUANTITATIVE METHODS

(1/2 credit)

Bibliometrics
Overview of methodologies and applications

Computer analysis

### C-04 RESEARCH METHODS

(1/2 credit)

Definition of research

The research proposal

C-05 INFORMATION SOURCES

(1/2 credit)

Introduction to information sources
A brief overview

C-06 INFORMATION STORAGE AND RETRIEVAL SYSTEMS

(1 credit)

Bibliographic description
Cataloguing codes

Content analysis
Principles and methods of content analysis; subject indexing - natural and controlled language; indexing languages; types of index languages - pre-coordinate, post-coordinate; thesauri; automatic indexing.

C-08 ELECTRONIC DATA PROCESSING

(2 credits)

C-09 APPLICATION OF INFORMATION TECHNOLOGY

(4 credits)

C-10 TELECOMMUNICATIONS AND NETWORKING IN INFORMATION SYSTEMS

(1 credit)

C-11 MANAGEMENT OF INFORMATION SYSTEMS AND SERVICES

(1 1/2 credits)

An overview of the Module should be presented, but with main emphasis on the following sub-modules:

Planning process

The management of change

Resource management

C-12 ECONOMICS AND MARKETING OF INFORMATION

(1/2 credit)

Economics of information

Strategies for marketing of information products

E-13 DESIGN OF COMPUTER-ASSISTED INFORMATION SYSTEMS

(2 credits)

E -16 ONLINE SEARCHING

(1 credit)

The online industry

Search strategy
File structures have already been covered in C-08 and E-13; in this module they need only be related to searching strategies on specific hosts.

Searching

As only one credit is available for this Module, searching must be confined to one system.

Management aspects

Training aspects

E-19 AUDIO-VISUAL STUDIES

(2 credits)

## APPENDIX III A SELECTIVE LIST OF JOURNALS IN INFORMATION STUDIES

The following abstracting journals are crucial sources of bibliographic data on information studies:

Bulletin signaletique. Part 101: Sciences de l'information, documentation

ERIC

Information science abstracts

INSPEC

Library and information science abstracts

Searches in any of these abstracting journals will reveal the wide range of journals which is concerned with information studies. Nevertheless, the highly selective list of journals set out below includes those which are likely to prove particularly important sources of readings in information studies and which could therefore form the basis for a teaching collection. It must be stressed that many other titles could have been added to this basic list.

a) English-language

Advances in librarianship

Annual review of information science and technology

Aslib proceedings

Audiovisual librarian

British journal of academic librarianship

College and research libraries

Database

Electronic library

Electronic publishing review

Illinois libraries

Information processing and management

Information technology and libraries

International forum on information and documentation

International journal of information management

International library review

Journal of academic librarianship

Journal of chemical information and computer science

Journal of documentation

Journal of information science

Journal of librarianship

Journal of library administration

Journal of the American Society for Information Science

Library hi-tech

Library journal

Library management

Library software review

Library trends

Libri

Online

Online review

Program

Public library journal

The reference librarian

Science and technology libraries

Special libraries

b) French-language

Bulletin des bibliothèques de France

Bulletin d'informations de l'Association des Bibliothécaires francais

Cahiers de la documentation

Documentaliste

Documentation et bibliothèques

Médiathèques publiques

c) German-language

ABI-Technik

Bibliothek

Bibliotheksdienst

Buch und Bibliothek

DFW

Mitteilungsblatt / Verband der Bibliotheken des Landes Nordrhein-Westfalen

Zeitschrift für Bibliothekswesen und Bibliographie

Zentralblatt für Bibliothswesen

d) Italian-language

Accademie e Biblioteche d'Italia

Biblioteche oggi

Bollettino d'informazioni / Associazione Italiana Biblioteche

Bollettino per biblioteche

e) Spanish-language

Actualidades bibliotecológicas

Bibliotecas y archivos

Cadernos de biblioteconomía, arquivística e documentação

Revista espanola de documentación científica

Revista interamericana de bibliotecología

Revista latinoamericana de documentación

f) Dutch-language

Bibliotheek en Samenleving

Open

g) Scandinavian languages

BBL (Swedish)

Bibliotek 70 (Danish)

Bogens Verden (Danish)

Bok og Bibliotek (Norwegian)

DIK-forum (Swedish)

Nordisk Tidskrift för Bok-och Biblioteksväsen
(Danish/Norwegian/Swedish)

Tidskrift för Dokumentation (Danish/Norwegian/Swedish)

h) Russian-language

Bibliotekovedenie

Bibliotekovedenie i bibliografiya

Nauchno-tekhnicheskaya informatsiya. Seriya 1

Nauchno-tecknicheskaya informatsiya: Seriya 2

Nauchnye i tekhnicheskie biblioteki SSSR

Sovetskaya bibliografiya

Sovetskoye bibliotekovedenie

The following two journals are important sources of articles on education and training in the area of information studies:

Education for information

Journal of education for library and information science

In addition to these journals, a wealth of information can be found in the multi-volume specialist encyclopedia:

Encyclopedia of library and information science. 35 vols. + supplements. New York: Dekker, 1968-

## PGI Studies and Documents in the Field of Education and Training

ATHERTON, P. - Guidelines for the organization of training courses, workshops and seminars in scientific and technical information and documentation. - Paris : Unesco, 1975. - 88 p. - (SC-75/WS/29). Also available in French and Spanish.

ATHERTON, P. - Handbook for information systems and services. - Paris : Unesco, 1977. - 259 p. (ISBN 92-3-101457-9). Also available in French, Russian and Spanish.

COCHRANE, P. - User based information services. A slide-tape presentation. Paris : Unesco, 1987. - (PGI-86/WS/27). Only limited number of copies available.

COOK, M. - Guidelines on curriculum development in information technology for librarians, documentalists and archivists. - Paris : Unesco, 1986. - 123 p. - (PGI-86/WS/26). Spanish and French versions in preparation.

COOK, M. - Guidelines for curriculum development in records management and the administration of modern archives : a RAMP study. - Paris : Unesco, 1982. - 74 p. (PGI-82/WS/16). Also available in French and Spanish.

EVANS, A.J., RHODES, R.G., KEENAN, S. - Education and training of users of scientific and technical information : UNISIST guide for teachers. - Paris : Unesco, 1977. - 143 p. (ISBN 92-3-101452-5). Also available in French, Russian and Spanish.

FISHBEIN, M.H. - A Model curriculum for the education and training of archivists in automation : a RAMP study. - Paris : Unesco, 1985. - 33 p. (PGI-85/WS/27). Includes a bibliography. Also available in Spanish.

GUINCHAT, C., MENOU, M. - Introduction générale aux sciences et techniques de l'information et de la documentation. - Paris : Les Presses de l'Unesco, 1981. - 402 p. (ISBN 92-3-201860-8). Also available in English and Spanish. Arab and Chinese versions in preparation.

HALL, N. - Teachers, information and school libraries. - Paris : Unesco, 1986. - 110 p. (PGI-86/WS/17). Spanish and French versions in preparation.

HARRIS. C. - Training package on information and documentation. - Paris : Unesco, 1987. - (PGI-86/WS/28). Only limited number of copies available.

International Symposium on harmonization of education and training programmes in information science, librarianship and archival studies. Unesco House, Paris, 8-12 October 1984. Final Report. - Paris : Unesco, 1984. - 13 P. (PGI/E.T./HARM. II/8). Also available in French.

KATHPALIA, Yash P. - A Model curriculum for the training of specialists in document preservation and restoration : a RAMP study with guidelines. - Paris : Unesco, 1984. - vi, 31 p. (PGI-84/WS/2). Also available in French and Spanish.

LANCASTER, F.W. - Guidelines for the evaluation of training courses, workshops and seminars in scientific and technical information and documentation. - Paris : Unesco, 1975. - 102 p. (SC-75/WS/44). Also available in French and Spanish.

LANCASTER, F.W. - Guidelines for the evaluation of training courses, workshops and seminars (Second edition). - Paris : Unesco, 1983. - 129 p. (BEP/83/III). English only.

Modern archives administration and records management : a RAMP reader compiled by Peter Walne with the assistance of a working group of the International Council on Archives. - Paris : Unesco, 1985. - 587 p. (PGI-85/WS/32). Spanish and French versions in preparation.

MOORE, N. - Guidelines for conducting information manpower surveys ; Vol.I. The Manual ; Vol.II. Questionnaires and accompanying documents. - Paris : Unesco, 1986. - 88, 34 p. (PGI-86/WS/3). Also available in French and Spanish.

NEELAMEGHAN, A. - Guidelines for formulating policy on education, training and development of library and information personnel. - Paris : Unesco, 1978. 38 p. (PGI-78/WS/29). Also available in French and Spanish.

Newsletter on education and training programmes for information personnel. Published by FID under Unesco contract. - The Hague : FID, 1979 -

PARKER, J.S. - Library and information science and archive administration : a guide to building up a basic collection for library schools. - Paris : Unesco, 1984. - 148 p. (PGI-84/WS/11).

Register of short-term education and training activities in librarianship, information science and archives / Inventaire des activités de formation de brève durée dans le domaine de la bibliothéconomie, des sciences de l'information et de l'archivistique / Inventario de las actividades de formacion de breva duracion en la esfera de la bibliotecologie, las ciencias de la informacion y la archivologia / Second edition. Compiled and edited by M.L. Dosa and J. Collin. - The Hague, Paris : FID and Unesco, 1984, 187 p.

SARACEVIC, T. - A Course in information consolidation. A Handbook for education and training in analysis, synthesis and repackaging of information (preliminary version). - Paris : Unesco, 1986. - 128 p. (PGI-86/WS/14).

SAUNDERS, W.L. - Guidelines for curriculum development in information studies. - Paris : Unesco, 1978. - 38 p. (PGI-78/WS/27). Also available in French and Spanish.

SIMMONS, P. - Teaching package on the use of information handling standards : computer aspects of bibliographic records, computer hardware, computer software (preliminary version. - Paris : Unesco, 1986. (PGI-86/WS/4). various pagings. Further modules to be issued later.

THOMPSON, A.H. - Guide to the production and use of audio-visual aids in library and information science teaching. - Paris : Unesco, 1983. - 125 p. (PGI-83/WS/17). Also available in French and Spanish.

VAUGHAN, A. - Reader on management. To be issued in 1987. French and Spanish versions in 1988.

WASSERMAN, P., RIZZO, J.R. - A Course in administration for managers of information services : design, implementation and topical outline. - Paris : Unesco, 1977. - 79 p. (SC-76/WS/110). Also available in French.

WATSON, D.G. - Guidelines for the organization of short courses and workshops on the dissemination of data in science and technology. - Paris : Unesco, 1986. - 73 p. (PGI-86/WS/11). French and Spanish versions in preparation.

WHITE, B. - Directory of audio-visual materials for use in records management and archives administration training. - Paris : Unesco, 1982. - 71 p. (PGI-82/WS/8).

WILSON, T.D. - Guidelines for developing and implementing a national plan for training and education in information use. - Paris : Unesco, 1980. - 50 p. (PGI-80/WS/28). Also available in French and Spanish.

World Guide to library schools and training courses in documentation / Guide mondial des écoles de bibliothécaires et de documentalistes. - 2nd edition. - London : Clive Bingley ; Paris : The Unesco Press, 1981. - 549 p. (ISBN 0-85157-309-6).

Copies of the above studies and documents are available from:

Division of the General
Information Programme
UNESCO
7, Place de Fontenoy
75700 PARIS
France